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ABSTRACT

Site visits were made by a team of consultants to Florida A&M University (FAMU) and the University of Florida (UF), the two institutions providing pharmacy education in Florida, to review programs and assess issues relating to entry-level degrees, manpower needs, and delivery systems. After a brief history of academic programs in pharmacy, the doctor of pharmacy degree is described. The history of both the FAMU and UF programs are recounted, and specific recommendations are offered to each institution. On a systemwide level, the following recommendations are made: (1) for reasons related to economics, curriculum, and standards, it is in the best interests of the two colleges to each offer only one entry-level professional degree; (2) the Pharm.D. should be the sole entry degree program due to level of clinical training, professional competition, depth of study, and new practicing requirements; (3) both FAMU and UF should prepare plans to phase out the baccalaureate program in pharmacy; (4) further studies are needed to project state needs for pharmacists; (5) any real expansion of programs should be curtailed until the need is documented. Appended are the consultants' vitae, national data on enrollments, and standards of practice for the pharmacy profession. (LB)

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STATE UNIVERSITY SYSTEM OF FLORIDA

PHARMACY PROGRAM REVIEW

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NOVEMBER 1985

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PHARMACY PROGRAM REVIEW
CONSULTANTS' REPORT

NOVEMBER 1985

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ACKNOWLEDGMENTS

In November 1985, the team of consultants authoring this report visited Florida A & M University and the University of Florida, the two institutions providing pharmacy education in the State of Florida, to review programs and to specifically address the following issues in that review:

a) What is the appropriate entry-level degree that each institution should provide to insure that the needs of the state and the pharmacy professions are best served?

b) What manpower needs should be addressed? What admissions and recruitment strategies exist or can be designed to respond to those needs.

c) What is the most effective means of delivering educational opportunities in pharmacy to the people of Florida? Should new programs and/or new centers be developed, or is it feasible to expand the programs at the existing locations to meet increased demand?

In addition, the consultants were requested to pay particular attention to the quality of graduate programs.

The individual Schools had previously submitted extensive self-study documents and the State University System provided additional data and information. This report is the result of both the on-site program review and the study of the materials provided.

A special thanks is directed to Dr. William Caldwell, faculty consultant, for his leadership in coordinating the review and for providing valuable insight to the consultants. His participation in the review process contributed enormously to the success of this effort.

We would also like to thank Dean Michael Schwartz and Dean Charles Walker, and their staffs, who prepared materials, scheduled interviews, and participated actively in all facets of the review process.

Finally, we want to thank the entire staff of the Academic Programs Office for its assistance in furthering the successful completion of this endeavor. The individual attention given to schedules and deadlines, and the excellence in quality of workmanship, have been significant contributions to the success of this review and are sincerely appreciated.

Howard C. Ansel
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I. A BRIEF HISTORY OF ACADEMIC DEGREE PROGRAMS IN PHARMACY

The preparation of pharmacists in this country began as an apprenticeship system, with aspiring pharmacists learning from established practitioners. As the science and technology of the field developed, formal education for pharmacists was deemed essential, and academic programs were instituted. These programs increased steadily in length and scope and the requirements for competence in practice grew.

In tracing the evolution of pharmaceutical education we step back to the year 1821, the year the Philadelphia College of Pharmacy and Science was established. This was the first college of pharmacy, and over the next eighty years it was joined by a multitude of others, each of which had its own ideas about what constituted the proper and adequate education of the pharmacist. As a result, there were eighty schools at the turn of the century offering one of seven degrees for programs that varied in length from three months to five years. With the new century came new ideas which, in turn, led to improved standards of practice and of education as well. Over time, the length of the difficult curriculum grew from 2 to 3 then to 4 years, and every degree but the Bachelor of Science vanished from the colleges.

Of the many historical events that took place in pharmacy education in the United States during the first half of this century, none was more notable than the benchmark survey conducted in 1948 by the American Council on Education. The report that ensued covered 11 separate areas, and of the many recommendations appearing in the document, none was to have a more profound effect than the following. "IT IS RECOMMENDED that the American Association of Colleges of Pharmacy and the American Council of

Pharmaceutical Education take the necessary and initial steps for the development and establishment of a six-year program of education and training leading to the professional degree, Doctor of Pharmacy (Pharm.D.). This program to include two or more years of general education and basic science training."

It should be recalled that in 1948, all U.S. schools of pharmacy had four-year programs that led to the Bachelor of Science degree. Obviously, this was an extremely controversial recommendation, but one school found merit in the recommendation and quickly set in motion the process for adopting and developing the necessary curriculum. In 1950, slightly less than two years after the findings of the Pharmaceutical Survey were published, the University of Southern California became the first school to offer the Doctor of Pharmacy degree. It went one step further by disbanding its Bachelor of Science program an unintentionally kicked off the debate over whether the profession should be all Pharm.D. or a mixture of B.S. and Pharm.D. It is a debate that has listed for about 35 years. (In 1956 the University of California, San Francisco, joined the University of Southern California as the only two schools of pharmacy providing entry-level Pharm.D. programs.) In the 1960's, when new patient-oriented (clinical) roles for pharmacists were developing, these two colleges modified their curricula to provide time for the clinical training essential to the new objective. Thus, the birth of that mutant now called Clinical Pharmacy. Beginning in the late 1960's, a number of other colleges began to offer a post-baccalaureate Pharm.D. program which incorporated more extensive didactic work as well as the clinical training lacking in the B.S. curricula. Thirty-five schools now offer the Pharm.D. as a post-B.S. degree.

In 1975, the results of a new national study of pharmacy education, "Pharmacists for the Future - The Report of the Study Commission on Pharmacy," was released. This study, now dubbed the "Millis Commission Report," contained a number of recommendations for improving the quality and scope of education for future pharmacists. Highlighted among the recommendations was the need for intensive clinical training and a strong plea for flexibility in the curriculum to allow each student the option of gaining greater knowledge and skill in a selected area of pharmacy.

In 1978, the American Association of Colleges of Pharmacy, an organization made up of the 72 Colleges of Pharmacy in the United States, voted on the issue of whether or not the Pharm.D. should become the sole entry-level degree standard for the profession. At that time the decision (by a vote of 2 to 1) was to continue offering both the B.S. and Pharm.D. as entry-level degrees. At the 1985 AACP Annual Meeting the issue was again debated. While the House of Delegates voted to retain both the B.S. and Pharm.D. degrees as entry-level degree options, the vote this time was approximately 6 to 5. This would indicate that more and more schools are changing their position on the entry-level degree controversy in favor of the Pharm.D. degree.

In the period from 1975 to 1984 five colleges of pharmacy shifted to the Pharm.D. as the sole entry-level degree (Illinois, Mercer, Michigan, Nebraska and Tennessee). During this period, approximately 14 others began to offer the students the option of the Pharm.D. as an entry-level degree while retaining the B.S. as an alternative. Most of these schools as well as many others have indicated that they would like to progress to a single entry-level Pharm.D. degree as soon as sufficient resources and clinical sites are available.

In 1984 the American Pharmaceutical Association, a practitioner organization consisting of over 50,000 pharmacists, established a Task Force on Pharmacy Education to study the issue of whether or not the Pharm.D. should become the sole entry-level degree. This task force reommended that the change be gradual, allowing time for the colleges to make the shift as their resources permitted. The full shift was suggested to be completed in 1990; by 1996, only Pharm.D.'s would be graduated. The American Society of Hospital Pharmacists, another practitioner organization of approximately 21,000 pharmacists, passed a resolution in 1978 indicating that the Pharm.D. should be the sole entry-level degree. At their annual meeting in 1985 they reaffirmed that recommendation.

There is growing movement in the United States toward the establishment of the Pharm.D. program as the single entry-level professional degree at both state institutions and at private colleges. This trend is underscored by a new school of pharmacy being established at Campbell University in North Carolina, which will open in 1986. It is interesting that the first new pharmacy school to be opened in over 30 years does so as an all entry-level Pharm.D. institution.

II. THE DOCTOR OF PHARMACY DEGREE (PHARM.D.)

Doctor of Pharmacy degree programs are offered nationally as either entry-level or post-baccalaureate programs. At the entry-level, the programs are typically six years in length whereas at the post-baccalaureate level, two years beyond the 5-year baccalaureate are required. Graduates of either

B.S. programs or of entry-level Pharm.D. programs are eligible for pharmacy licensure through State Boards of Pharmacy. The professional degree programs in pharmacy are accredited through the American Council on Pharmaceutical Education. The B.S. and Pharm.D. programs at the University of Florida and at Florida A & M University are accredited.

There are 72 schools and colleges of pharmacy in the United States; an additional school is in the process of being established at Campbell College in North Carolina, as is mentioned above. Of the 72 institutions, seven offer the Pharm.D. as the only professional entry-level degree, while fourteen institutions, including the University of Florida and Florida A & M University, offer students the option of entry-level B.S. or Pharm.D. degrees. Thirty-three schools offer the Pharm.D. as a post-baccalaureate degree. Forty-four schools and colleges of Pharmacy currently offer only the B.S. degree for professional entry.

Over the past decade, the number of institutions offering the entry-level Pharm.D. degree has increased from 5 to 21. During this period the enrollment of students in schools and colleges of Pharmacy has dropped from 23,355 to 18,646, and the number of students in Pharm.D. programs has increased from 1,226 to 2,635. Explanations for the declining enrollment abound and include:

a) A loss of federal capitation funding caused pharmacy schools to reduce their admissions to levels that their non-federal resources could support;

b) A smaller college-bound cohort, nationally;

c) A large number of students selecting study in areas such as computer science and business rather than choosing health science careers;

d) The interest among pharmacy colleges to accept well qualified applicants in the period of a declining applicant pool; and,

e) A reduction of enrollments at some schools caused by implementing faculty-intensive clinical programs.

The Doctor of Pharmacy program evolved in recognition of the need for pharmacists to become more patient-care-oriented. Thus the additional curriculum length over the baccalaureate programs is devoted largely to the development of clinical skills. In addition to didactic coursework in such areas as patient assessment, pharmacokinetics, pathophysiology, and pharmacotherapeutics, students gain experience through clinical clerkships in patient care settings (such as teaching hospitals) involving a variety of medical disciplines, e.g. general medicine, pediatrics, and psychiatry. Increased competencies may be obtained through post-doctoral residency programs which focus on individual disciplines. The residency programs are made available through the American Society of Hospital Pharmacists, institutional health centers, and colleges of pharmacy.

Because of the increased length of Doctor of Pharmacy degree programs the graduates are educated in greated depth and diversity than baccalaureate graduates to provide therapeutic counseling to patients and guidance on drug utilization to the prescriber. This increased level of clinical competence is essential for pharmacists to meet their responsibilities and potential in helping provide optimal health care delivery.

III. EVALUATING PHARMACY PROGRAMS IN THE STATE UNIVERSITY SYSTEM OF FLORIDA

As a part of the program evaluation process established by the State University System of Florida, a three-member team of consultants was commissioned to evaluate the academic pharmacy programs at the University of Florida and Florida A & M University. The consultants were Robert D. Gibson, Pharm.D., Associate Vice Chancellor, University of California, San Francisco, Howard C. Ansel, Ph.D., Dean, College of Pharmacy, the University of Georgia, and Jack R. Cole, Ph.D., Dean, College of Pharmacy, University of Arizona. In the evaluation process, the consultant team reviewed the self-study materials provided by each institution, as well as numerous supporting documents and other materials. On-site evaluations were conducted in Tallahassee and Gainesville as well as in Miami, where some clinical clerkship sites for Florida A & M University were visited. These site visits were conducted between November 17-23, 1985. During the visits, the consultant team met with University and College officials, pharmacy faculty, students and administrators.

The consultant team was asked specifically to evaluate the quality of the academic pharmacy programs in the state of Florida and to give special consideration to

(i) pharmacy manpower needs;

(ii) the appropriate entry-level degree(s) that each institution should provide to best serve the needs of the state of Florida and the profession of pharmacy; and,

(iii) what is/are the most effective means of delivering educational opportunities in pharmacy to the people of Florida.

In addition, the consultants were asked to pay particular attention to the quality of graduate programs.

At Florida A & M University, academic programs are offered leading to the Bachelor of Science in Pharmacy, Doctor of Pharmacy (Pharm.D.), Master of Science, and Doctor of Philosophy (Ph.D.) degrees. The University of Florida College of Pharmacy also offers these degree programs, as well as an array of post-doctoral residencies and fellowships and a Pharmacy/MBA program joint with the College of Business Administration.

The following sections more fully describe the pharmacy programs at the two institutions.

A: FLORIDA A & M UNIVERSITY

1. History and Overview of FAMU Programs

The Division of Pharmacy was established and first courses of instruction were offered at Florida A & M College in September, 1951. The College became a University in 1953, at which time the major instructional units were reorganized into eight schools and colleges.

The School of Pharmacy was elected to associate membership in the American Association of Colleges of Pharmacy in August, 1954, was examined for accreditation by the American Council on Pharmaceutical Education in January, 1956, and was placed on the list of Class "A" schools in February, 1956. The School of Pharmacy became the College of Pharmacy and Pharmaceutical Sciences in the Fall, 1982.

FAMU provides for the training of both pharmacy professionals and of basic and clinical scientists to serve the community at large and to address problems unique to ethnic minority populations. It must be recognized that

FAMU plays a unique role in higher education -- access. Part of its mission is to take a chance on black students who do not appeal to white recruiters; thus, the emphasis has been placed more on exit standards than on entry requirements. This mission is realistic because it makes access available for students who otherwise might not have finished college, or even attended one.

It must also be recognized that a smaller percentage of college freshman indicate pharmacy as a preferred profession than indicate the other health professions. Further, a lower percentage of blacks than white students aspire to become pharmacists. In many areas of the country where there is a shortage of physicians, clinical pharmacists often serve as a primary care provider of health services; many of the graduates of those schools with special missions, e.g. FAMU, serve these areas.

FAMU's School of Pharmacy had started its five-year program in September, 1957. The last four-year program students were graduated in 1961. From 1975 thru 1984, FAMU graduated (in pharmacy) 573 B.S. students, 27 post-baccalaureate Pharm.D. students, and 20 Masters degree students. An institution with a historic mission of providing higher education for blacks in Florida, the College of Pharmacy and Pharmaceutical Sciences at FAMU is now racially and ethnically diverse and has distinguished itself nationally in pharmacy education. Approximately 75% of the degrees awarded between 1975 and 1984 have been earned by minority students.

FAMU's entry-level Pharm.D. program was initiated in 1983, and its Ph.D. program authorized in 1985. It is the intent of FAMU to institute a single entry-level Doctor of Pharmacy degree program. Accordingly, the post-baccalaureate Pharm.D. will be phased out.

2. The Visitation

The consultant team visited the Florida A & M University programs in Tallahassee as well as in Miami. The following observations are presented based upon these visits.

The facilities for pharmacy on the campus of FAMU are judged adequate for the existing programs. However, with the recent commitment to a Ph.D. program and toward expanding research activities, consideration should be give to conducting a space utilization needs study with the goal of establishing budgetary and space priorities. Reallocations should be made accordingly. For example, the faculty may want to consider whether it wishes to continue the current number and array of required undergraduate laboratories, in lieu of alternative uses for the laboratory space. If the professional degree programs increase in size according to the stated enrollment goals, consideration must also be given to acquiring sufficient campus classroom space (lecture halls) to handle increased class sizes. (The dedicated classrooms now available are rather small and would not allow for much program growth.) In addition, attention must be paid to developing adequate space for the animal care facilities which support the research programs. In the opinion of the visiting team, expansion of the clinical component of the program may be accommodated in the existing physical facilities in both Tallahassee and the Miami area.

The clinical program established in Miami (in affiliation with the University of Miami School of Medicine, the Veterans Administration Medical Center, Jackson Memorial Hospital, Cedars of Lebanon Hospital, and several other patient-care institutions) is well-housed, with adequate physical facilities for current and projected program levels. These combined Miami

medical facilities offer a rich environment for clinical education and training and for clinical research. Expansion of the available clinical sites for teaching and research appears to be limited only by the availability of pharmacy faculty rather than by the availability of sites. At the present time, seven full-time FAMU faculty are assigned to the Miami program. FAMU has begun to establish a cadre of adjuncts from among the many qualified professionals in the area.

All clerkships for the doctor of pharmacy program and some of those for the baccalaureate program are conducted at the Miami clinical sites. The full-time FAMU faculty conduct the teaching, research, and service aspects of the program. A small group of (volunteer) adjunct faculty provide some support for the externship and clerkship programs. As the program expands, the adjunct faculty should be expanded and utilized to support the teaching program, particularly in the clinical clerkship portion of the curriculum. The college also should consider co-staffing arrangements with appropriate affiliated clinical units to foster expansion of clinical faculty. However, caution should be exercised in accommodating requests for the provision of pharmacy faculty at affiliated institutions; faculty should not be provided unless an appropriate student load can be assigned readily to the site. The consultants believe that the seven faculty can accommodate approximately 25-30 students per year at Miami. These numbers can be expanded through appropriate faculty additions and/or the increased utilization of adjunct faculty.

The review team emphasizes the importance of the type of clinical facilities available in the Miami installation (e.g., in pediatrics, oncology, medicine, geriatrics, pharmacokinetics, and ambulatory medicine) to

the current and future education and training of pharmacy students. The research opportunities presented by the medical center environment is also important to the strength and development of the pharmacy program.

FAMU should allow the rotation selection in Miami to grow and should foster the acquisition of additional adjunct teaching personnel by the hospitals/agencies being served; however, they should be careful not to spread existing faculty so thinly that they jeopardize the effectiveness of the program and the excellent rapport and support which presently exist at the University of Miami, Jackson Memorial Hospital and the Veteran's Administration Medical Center (VAMC).

FAMU's self-study document included plans to establish a Master of Science program in Pharmacy Administration and a Bachelor of Science in Toxicology. The consultants are concerned that the implementation of such plans would severly tax available resources. If the institution is intent on developing its entry-level Doctor of Pharmacy program and at the same time wishes to build its newly established Ph.D. program, any additional new programs should be delayed until plans for the allocation of available resources with respect to program priorities have been established.

During the last decade, the college has established a national and international reputation in research through publications in refereed scientific journals and through an impressive record in research program funding. In recognition of this quality, the institution has recently been awarded two research grants totaling $6.3 million, to develop a research infrastructure. It appears that equipment on hand for instruction and research are suitable for current programmatic needs; these new dollars will allow FAMU to build on its current strengths and establish still stronger research capabilities.

The faculty strength at FAMU consists of approximately 27 FTE which the consultants consider to be generally adequate for the baccalaureate program but inadequate for a growing Doctor of Pharmacy degree program together with the newly-established Ph.D. program. One inadequacy at the baccalaureate level occurs in the area of pharmacy administration, where the teaching load is fulfilled by a single individual who must simultaneously contribute biostatistical tasks. The consultant team recommends strengthening faculty resources in the pharmacy administration area, and the employment of a biostatistican to fulfill this latter important curricular and research function. Again, the consultants caution about the dilution of faculty resources by attempting to conduct simultaneously the didactics of two professional degree programs (B.S. and Pharm.D.), a large off-campus program (Miami), and a growing graduate program (M.S. and Ph.D.). The faculty and administration must set programmatic priorities and fund them selectively to achieve the quality they desire in all of these. The faculty and administration have already established one priority -- their stated desire to discontinue the baccaluareate program in favor of an all-Pharm.D. program.

The consultants agree with the desires of the FAMU College of Pharmacy that it may be in the best interests of the pharmacy community of the State of Florida for FAMU to offer only a single entry-level degree, preferably the Pharm.D. degree. It is inefficient as well as cost ineffective to offer both entry-level degrees. Further, only the highest quality pharmacy education should be offered for the students at FAMU; and the Pharm.D. provides the best opportunities to practice pharmacy in a variety of settings, both today and in the future.

It is also the consultants' opinion that explorations should be conducted with Jackson Memorial Hospital, the VAMC and the University of Miami to develop a fiscal recharge process for those clinical services provided by the (Miami) FAMU faculty. Such arrangements are not uncommon, are recognized as appropriate, and would help provide support for those faculty.

It is essential that FAMU maintain the quality of its Pharm.D. program. Considering the size of the faculty, and the facilities available (including those at the clinical program in Miami), care should be taken that only the most highly qualified students be accepted into the 3rd year of the program. It is suggested that FAMU drop its "0-6" concept and establish a 2-year prepharmacy program as prerequisite to admission to the 4-year Pharm.D. professional degree program. This would allow FAMU to draw the best students from its own undergraduate programs as well as provide more students at other institutions with an opportunity for admission into the FAMU professional program. The establishment of such a program would distinguish FAMU for providing the highest quality of educational opportunities for minorities.

It has been made clear to the consultants that although FAMU graduates have not always had an enviable record of success on the Florida licensure examination the recent success rate has been improved through actions taken by the FAMU faculty to better prepare their students for that examination. Although only 30 to 40 FAMU graduates are licensed each year in Florida, efforts should continue to further insure a high quality program, and to continue successful progress toward the licensure examination and practice. Therefore, no attempt should be made at this time to substantially increase enrollments.

It is important to note that only approximately 20% of the number of pharmacists licensed annually in the State of Florida at the present time are graduates of the two Florida schools. Florida appears to be satisfactorily providing needed professionals through importing them from other states. Therefore, an effort to increase pharmacy enrollment at FAMU at this time does not seem to be absolutely essential to the state of Florida. On the other hand, it is also clear that both health status and access to health care are worse for blacks than for whites and that a higher proportion of blacks than whites live in health manpower shortage areas. An increase in the number of minority practitioners would be expected to improve the health status of those underserved, and the need to increase the number of professionals to serve the underserved is both understandable and justified. It is unfortunate that FAMU's resource capacity can not accommodate additional enrollment at this time.

3. Recommendation to FAMU

In summary, based upon our visits to the FAMU installations and our review of the materials provides us, we make the following recommendations:

a. The facilities for pharmacy education at the Tallahassee campus of FAMU are judged to be adequate for the existing programs. However, with the commitment toward a Ph.D. program and the accompanying expansion of research activities, and the desire to provide increased opportunities for the Doctor of Pharmacy program, consideration should be given to conducting a study of space utilization and needs. The goal of such a study would be to establish program, budgetary and space priorities and to make reallocations accordingly.

Further, as the professional degree programs increase in size, according to the stated enrollment goals, steps should be taken to obtain campus classroom space to accommodate larger classes.

b. FAMU can increase its program in Miami using existing faculty. However, more extensive use of adjunct faculty will allow for a broader range of clinical clerkships to be provided. FAMU should seek to increase its usage of adjunct faculty, and should also explore a system of fiscal recharging for clinical services provided by FAMU faculty. This latter step would provide funds for additional programmatic improvement.

c. FAMU should move carefully in the establishment of new degree programs and should concentrate its immediate efforts on the building of its new Ph.D. and the entry-level Pharm.D. program. Faculty strength should be increased in pharmacy administration and biostatistics.

d. FAMU should not accept students into an entry-level degree program as freshmen, but should move to a two-year prepharmacy program as prerequisite to admission into its professional degree program. Further, FAMU should allow its program to grow slowly, maintaining high standards and concentrating on quality.

B. UNIVERSITY OF FLORIDA

1. History and Overview of UF Program

In 1923 the first Pharmacy students, 43 in number, were enrolled in wht was then the School of Pharmacy.

At that time three degree programs were offered: Ph.D. (Graduate in Pharmacy) requiring 2 years; Ph.D. (Pharmaceutical Chemist) requiring 3 years; B.S. in Pharmacy requiring 4 years.

In 1924 the two-year Ph.D. program was dropped, and in 1926 the Ph.C. was changed to a three-year Ph.D. degree.

In 1925 the School became a College and began offering graduate study leading to the M.S. in Pharmacy.

In 1931 the College became the first on the campus to offer the Ph.D. degree; the first Ph.D. was awarded in 1934. In 1932 the Ph.G. degree was dropped and the only professional degree offering became the B.S.

Shortly thereafter, in 1954, the College became a unit of the new J. Hillis Miller Health Center. In 1961 the College moved into a new wing of the medical sciences building of the Health Center. Meanwhile, in 1960, the College had converted to the five-year B.S. in Pharmacy program, which included a two-year pre-pharmacy program required for admission to the College.

In 1971 the College began new programs in continuing education for Pharmacists and intiated the statewide Drug Information Center to serve the needs of Pharmacists and other health professionals. In 1975 the College began to offer a post-baccalaureate program leading to the Doctor of Pharmacy (Pharm.D.) degree, which emphasized clinical training.

In 1979, the University of Florida decided to move toward offering only the Pharm.D. as its entry-level program. Following curriculum approval by the University in 1981-82, it was decided to attempt to effect this change by Fall 1985. In 1983-84, 13 Baccalaureate students then in their second professional year were allowed to change to the Pharm.D. program curriculum,

and in 1984-85, 26 students were allowed to make a similar change. In 1985-86 up to 60 of the current class will be allowed to change to the Pharm.D. curriculum. However UF still offers the baccalaureate degree, since in January, 1985 the Board of Regents required the College to maintain the B.S. in Pharmacy as an option, pending this review.

2. The Visitation

The team visited the College of Pharmacy's facilities at the Health Center on November 21 and 22. They consulted with faculty, students and administrators concerning all of the degree programs being offered, but focused a great deal of attention on the entry level degree question.

The University of Florida College of Pharmacy has an excellent faculty. The curricula are what one would expect from a progressive and fundamentally sound institution. A basic problem of the college lies with the difficulty of administering its three separate professional degree programs (the B.S., entry-level Pharm.D., and post-baccalaureate Pharm.D.). Reducing the professional programs to one would eliminate confusion in the minds of the students and faculty, and would eliminate duplicative costs as well. It is simply more cost-effective to have one program. The current thinking of the faculty and administration of the college is to offer the entry-level Pharm.D. program only.

The talented basic science faculty has been extremely productive and has greatly expanded the research base of the institution. Extramural grant support has grown from about $400,000 in 1979 to more than $3,000,000 in 1985. This growth, however, has generated a substantial "space crunch." The College of Pharmacy will receive approximately 12,000 to 15,000 square feet of new space in 1988, which should alleviate the present shortage. However,

if the University of Florida wishes to further expand the research output of its faculty, both new basic science faculty and new space will be required. These resources are not essential for the development and expansion of the entry-level professional program, but are critical for the continued expansion of the graduate academic program and its accompanying research program. The graduate enrollment at this time consists of approximately forty students. Since the College expects to increase that and eventually reach a level of 60-80 graduate students, both additional space and additional faculty must be planned for.

The consultants note that the college suffers in its ability to attract quality graduate students because of an inability to increase student stipends, thus they encourage the development of a mechanism to increase financial support for graduate students. The College's strategic plan identifies graduate student enrollment and support as a high priority issue, and proposes a mechanism to help resolve the graduate student stipend problem. Encouragement is given to aggressively pursue the resolution of this inability to be strongly competitive in recruiting quality graduate students.

The consultants note a lack of space for sufficient laboratory instruction in the basic science portion of the program. Presently, three courses utilize laboratories: analytical chemistry, dispensing and physiology. The faculty and administration concur that the ability to provide other laboratory coursework experience would be useful in the educational program. A noted difficulty in scheduling laboratory courses is that the laboratories are Health Center shared facilities and that space priorities are directed to other programs. It would be helpful if these or other laboratories could be made more readily available for use by the College of Pharmacy for its programmatic needs.

If UF were to offer only the entry-level Pharm.D., it could, using present facilities and by expanding the clinical clerkship program, continue to produce up to 120 pharmacists per year to help meet the needs of the state. However, to do so would require an increase in the number of clinical faculty. On the other hand, there would be no need for additional basic science faculty to support the expansion of the clinical portion of the program.

The UF initiative toward an all-Pharm.D. entry-level program will also require the establishment of various additional clinical sites throughout the state. The college has an excellent relationship with the hospital pharmacy directors with whom they presently interact; the consultants encourage similar collaboration in the development of additional clinical sites. Clinical sites customarily utilize the services of qualified adjunct personnel, some of whom will be working rather independently from the main campus. Hence, the consultant team urges that the College establish a quality control mechanism for adjunct appointments, a process consistent with the one for on-campus faculty positions having similar levels of responsibility.

3. Recommendations to UF

We summarize our recommendations to the University of Florida below:

a. Move toward the offering of a single professional Doctor of Pharmacy degree program, recognizing that to do so will require an increase in the number and diversity of clinical clerkship sites and the directing of appropriate resources to maintain the new programs established.

b. Increase funded research programs only when it is clear that adequate space can be provided to carry out that research. It is emphasized that caution must be exercised to assure that further encroachment on space required for the professional program not occur.

c. Aggressively pursue resolution of the Colleges' difficulty in competitively recruiting quality graduate students.

d. Establish an adjunct faculty appointment and monitoring process that is consistent, but not necessarily identical, with regular faculty appointment and retention procedures.

e. Pursue resolution of space needs to fulfill the laboratory experience requirements designated by the faculty to be required in the curriculum.

IV. SYSTEMWIDE ISSUES

A. The Entry-Level Degree Question.

Pharmacy students now have several types of educational programs available to them. We describe them briefly.

i) Doctor of Pharmacy Entry-Level Degree.

The Doctor of Pharmacy entry-level curriculum is completed over four professional study years following two years of pre-pharmacy preparation. The first two years of the professional curriculum emphasize the pharmaceutical and biomedical sciences. The third year builds

on these basic sciences, adding professional practice courses in the clinical sciences, social sciences, and management. The fourth year of the program is devoted to applied clinical experiential training. In the latter, each student completes a diversity of clinical rotations in patient-care environments. Upon successful completion of the Doctor of Pharmacy degree program and completion of a 1500 hour internship program supervised by the State Board of Pharmacy, a student becomes eligible for the pharmacy licensing examination. Students receive some credit toward the 1500 hour internship requirement through completion of the clinical experiential training.

ii) Bachelor of Science in Pharmacy

The Bachelor of Science degree in Pharmacy is a three-year professional curriculum preceded by two years of pre-pharmacy coursework. The first two years of the baccalaureate curriculum is comprised of pharmaceutical and biomedical sciences, while the third year is devoted to professional practice courses and, usually, a ten week clinical clerkship experience. Successful completion of this degree program and a 1500 hour internship program administered by the State Board of Pharmacy makes one eligible to take the pharmacy licensing examination. A student may receive some credit for training received in the clinical clerkship toward the internship requirement.

iii) Post-Baccalaureate Pharm.D.

The post-baccalaureate Pharm.D. program is a two year program building on the Bachelor of Science in Pharmacy. It includes an additional year of didactic training as well as the year of clinical experience found in the entry-level Pharm.D.

iv) Residencies and Fellowships

Through residencies and fellowships sponsored by universities and other health care clinical sites, pharmacy graduates can enhance their clinical and research experience.

Over the past thirty-five years, the question of which entry-level degree or degrees should be offered has been widely debated. This consultant team is of the opinion that the two institutions in the State University System of Florida should each offer just one entry-level degree, and that degree should be the Pharm.D.

Why having just one degree is appropriate.

In the view of the consultants, it would be in the best interests of the two colleges of pharmacy in the State of Florida to each offer only one entry-level professional degree. The reasons for this recommendation include the following:

1) Economic: There considerable inefficiency in operating two or more professional degree programs concurrently. First, the clinical faculty must divide their time between programs, with the resultant dilution of their talents and energies. This can result in the diminished quality of both programs. Further, running two programs simultaneously also requires additional faculty and support staff that would not be necessary to handle a single degree program.

2) Curriculum Management: It is apparent that having two professional degree programs in each of the two Colleges of Pharmacy has resulted in a great deal of confusion among the students concerning each program's

curriculum, and also in confusion among the faculty in the advising of students. Students can be misadvised concerning proper courses to take, and can be given confusing information as to which program is best for their particular interests. In addition to alleviating the many scheduling problems two different programs can generate, increased peace of mind and stability could be achieved by simply having one entry-level degree program.

3) Uniform standards of competency for practice: As indicated above, students would be receiving different levels of clinical instruction if two degree programs are offered. This implies that different competency levels will be achieved by students. It is possible therefore that some students would be limited in their opportunities for practice. Uneven competencies, the result of more than one entry-level program, confuses the public and even other health science professionals. Having only one entry-level degree program would help to assure high quality and an even level of competency throughout.

Rationale for the Pharm.D. as sole entry degree program

The appropriate entry-level degree should:

1) Prepare a more clinically oriented pharmacist to meet the health care needs of the citizens of the state of Florida.
2) Provide optimal practice opportunities for graduates of the program.
3) Decrease the cost of health care through cost containment mechanisms.

4) Provide on opportunity to develop innovative pharmacy services through increased clinical competencies. For example, geriatric patient counseling which will help increase the quality of life for the elderly.

5) Provide the State of Florida the opportunity to be at the forefront of pharmaceutical care for its citizens and place it in a leadership role in pharmaceutical care, nationally.

6) Provide the highest quality pharmacentical education for the citizens of this state.

Many factors lead to the conclusion that the Pharm.D. program is appropriate degree to accomplish these objectives. Among them are:

i) Level of clinical training: a major consideration is the essential nature of clinical experiential training for the pharmacist. It is evident that the limited time available for such training in the B.S. curriculum is insufficient to prepare the basic pharmacist to perform the tasks well and to fully accept the responsibilities outlined in the Standards of Practice.[1] It also is not possible in the 5-year B.S. professional curriculum to give the student all of the basic professional courses necessary to support an elective program that will allow the selection of a variety of different options. Both of these goals can be accomplished in the 6-year Pharm.D. professional curriculum.

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1 The 1979 "Standards of Practice for the Profession of Pharmacy" was the result of several years of study by the AACP and the APhA (American Pharmaceutical Association). These standards recognize new and emerging roles of pharmacists and set forth specific tasks and responsibilities for the Pharmacists in four categories:

I. General Management and Administration of the Pharmacy
II. Activities Related to Processing the Prescription
III. Patient Care Functions
IV. Education of Health Care Professionals and Patients

ii) Professional competition: Another major consideration is the clear national movement toward the entry-level Pharm.D. and the impact this can have on students. Each year the percentage of pharmacy students enrolled in Pharm.D. programs grows, and the number of colleges offering this program, or planning to offer it increases. The graduates of B.S. pharmacy programs are normally expected to be in practice for as long as 40 years. By mid-career, if the Pharm.D. movement continues, those B.S. graduates will be competing for positions with Pharm.D. graduates. The lack of advanced knowledge and increased skills gained in Pharm.D. programs places the successful competition of B.S. graduates at risk. In addition, it must be recognized that the growing trend toward providing increased drug therapy decision-making responsibilities and other clinically important roles[2] will require that practitioners of the future have the ability to learn and practice in these new roles or become obsolete.

iii) Depth of Study: While continuing education can be valuable in acquiring knowledge, improving skills, and learning new techniques, it can only be effective if built upon a solid base; the Pharm.D. program can provide that base. Dealing with drug interactions, for example,

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2 The Standards of Practice are basic guidelines for the development of curricula in colleges of pharmacy. The latter two sections of those Standards reflect changes in practice which add new dimensions to the pharmacist's role in patient care and education, including monitoring the patient's drug therapy, advising the patient on proper use of drugs, and advising prescribers and other health professionals on drug utilization.

requires more extensive knowledge of pharmacokinetics and drug metabolism than can usually be included in the B.S. curriculum. The pharmacist who is well-educated in these areas and who also has clinical experience can contribute greatly to problems such as the optimization of therapy with dangerous drugs for particular patients, or dealing with patients with drug-related problem. It is known that the over-65 age group use drugs at a rate 3-times that of the rest of the population, and it is well-known that they often metabolize drugs at different rates and react differently to certain drugs than younger patients. With the high proportion of the elderly in Florida, it is especially important that the pharmacist be capable of dealing with the drug therapy problems of this special population. The Pharm.D. degree assures the level of background required for the delivery of this and other kinds of quality pharmaceutical care.

iv) New Practicing Requirements: Another example of the growing role for pharmacists in Florida is a statute, effective October 1, 1985, which allows pharmacists to prescribe certain legend drugs. The allowed drugs include many which are in over-the-counter products (usually in lower strength) or which have been approved by an FDA advisory committee for transfer to over-the-counter status. The pharmacist's role as a health care consultant will be greatly increased by this new responsibility, and clinical training is essential to fulfilling this role. It is clear that the Pharm.D. curriculum will prepare pharmacists in greater depth for this counseling.

The above rationale is the basis upon which the consultants are recommending that the Pharm.D. become the sole entry-level degree program at both UF and FAMU. The BS in pharmacy could be discontinued according to the schedule in the next section.

It is recognized that continuing distress is associated with resolution of the one degree issue. Increasing numbers of Bachelor of Science graduates are concerned about the possible negative impact that growing numbers of Pharm.D. graduates will have on their job security. Some, if not many, are looking for a way to upgrade their degree at a pace and in a manner that does not exhaust or bankrupt them. And there is good reason for them to be alarmed, if not now, most certainly in the not too distant future. As more schools establish Pharm.D. programs, considerably larger numbers of Pharm.D. graduates will enter the job market place with each passing year. And the squeeze will begin, or increase as it has in other states.

Because both the B.S. and the Pharm.D. graduates are the products of the schools, both educators and administrators of pharmacy programs have an ongoing responsibility to address this issue. Presently, an external degree program is beyond the means of most schools; however, with the assistance of all of the players in the profession, resources could be directed and innovative, less expensive methods of providing external degree opportunities could be developed. This is a task that the profession must undertake because all, one way or another, have participated in the evolution of pharmacy programs that have stranded, or threaten to strand, earlier graduates.

At present, several efforts are being made to establish external Pharm.D. degree programs; the establishment of such programs is a topic upon

which the American Association of Colleges of Pharmacy has focused considerable attention. In response to the call by professional associations for the development of a nontraditional (external) Pharm.D. program, two consortia of pharmacy schools were formed in 1983: the CIC Consortium, composed of the Big Ten schools of pharmacy; and the South Carolina Consortium, composed of schools from several parts of the country, including Florida. Both consortia had similar objectives; to develop curricular materials in the most efficient way for use by pharmacy schools in implementing their own external Pharm.D. programs.

The AACP offered to serve as a coordinating agent and establish an "umbrella" organization for the two consortia. An agreement to form the AACP Curricular Resources Consortium (CRC) was reached and the CRC is now functional. Both previously formed Consortia are a part of the AACP CRC. The initial task of the CRC is to develop curricular resources for external Pharm.D. programs. It is intended that the CRC be expanded by inviting all pharmacy schools to enroll at either of two levels: 1) Full Participants--those who will be willing to produce and use educational resources; 2) Supportive Participants--those who will be willing to use but not produce educational resources.

Although the external Pharm.D. degree issue is not completely resolved, steps are being taken to develop a step-wise process that will provide a mechanism for providing an external Doctor of Pharmacy degree.

A Potential Schedule for Phasing Out the BS in Pharmacy

As a result of students having been admitted to the B.S. programs for the current year (1985-1986), it would be impossible to discontinue awarding the bachelors degree in pharmacy prior to the summer of 1988 at UF, and even later than that at FAMU. It also would be necessary to provide an additional

year for those students who fall behind schedule. The consultants feel that the B.S. should be phased out as quickly as is practical. Therefore it is recommended that no new B.S. students be admitted to the 1st professional year at UF, effective immediately. Since FAMU has historically admitted students to the college of pharmacy directly from high school and because FAMU is obligated to those students who entered the program as freshman this past fall FAMU would have to allow currently admitted students to enter the first professional year in the fall of 1987; however FAMU should not admit any new students into the B.S. program.

UF has asserted that no new resources would be needed to implement the all-Pharm.D. entry-level degree program immediately. Nevertheless, the above period of phase-out would allow them to inventory clinical sites and ensure that they are totally prepared to acommodate all of the students as they approach the 6th year - the clinical year - in 1989 or 1990. The last time a B.S. degree should be awarded would be in June 1989, which would allow an extra year for those students who fall behind schedule.

FAMU would have to provide for 5 year B.S. students who were accepted this year; hence would offer them an opportunity to graduate by 1991, again providing one year beyond their scheduled completion dates. FAMU also should plan on the extra clinical sites and resources that would be required by 1989 and 1990 for its students who will matriculate into the program as first professional year students in 1985 and 1986.

FAMU and UF should each prepare a plan for phasing out the baccalaureate program under a schedule which attends adequately to assurances of quality and of accessibility for both programs during the transitional period.

B. MANPOWER

The second of the three systemwide topics for this review is the manpower needs of the profession. Although this has been the subject of a great deal of informal study and of considerable speculation, the issue remains unresolved. A shortage is apparent to those who are experiencing difficulty in finding qualified pharmacists to fill existing positions; others feel that perhaps there are too many positions to be filled. That is, perhaps the public can be well-served with even fewer pharmacies than presently exist.

Studies conducted in the late 1960's determined that the optimal number of pharmacists needed to serve the U.S. population was 68 per 100,000. Between 1962 and 1973 the existing ratio fell from 68 to 63 per 100,000. It was on the basis of this drop, in part, that the profession argued for federal funds to increase the number of graduates. The foundation for the argument was that an increase to the 68/100,000 ratio would not cause significant unemployment and would afford additional access to pharmaceutical care. After all, there was effectively no unemployment when this ratio existed in 1962, and in 1973 people were using more, not fewer, prescribed medications. The federal funds were supplied, and a 50% increase in enrollments occurred between 1970 and 1975. It then became apparent to American Association of Colleges of Pharmacy that the schools had reached capacity, and it convinced the government to drop the requirement that schools continue to increase enrollments further.

In the late 1970's, the federal government became concerned that many of the health professions might be producing too many graduates. A forecasting study was conducted, and in 1980 a Bureau of Health Manpower report projected that pharmacy and some other health professions would experience a substantial oversupply starting in 1980. It was on the basis of these projections

that some leaders in the pharmacy profession began assulting pharmacy education for its alleged irresponsibility in producing too many graduates. But there were some faulty assumptions built into the forecast which overstated the problem, such as:

i) not adequately considering the tremendous increase in the number of females in pharmacy schools,

ii) the actual decrease in enrollments since 1975 and,

iii) the increased demand for pharmacy graduates in non-traditional practice roles.

If one continued to use the optimal ratio of 68 pharmacists per 100,000 population, manpower projections in 1980 showed a need of 12,000 more pharmacists than were available. (But the same manpower study showed that less than 2% of pharmacists were unemployed and seeking employment in the profession.) The study did acknowledge more severe unemployment problems in certain regions; however, in general, the supply was in balance with demand.

Since 1975, pharmacy school enrollments have decreased over 20%. Some of the decrease has been planned but some has not (for instance, the drop in the number of pharmacy school applicants). As described elsewhere in this report, explanations for the drop abound; but the reality exists that, with this decline, pharmacy may face a manpower shortage in the near future.

There is insufficient data upon which to make good judgments. While we know, for example, how many pharmacists are licensed and reside in the state, much of the information necessary to calculate or project manpower needs is lacking, including:

a) how many licensed pharmacists are actually employed in fields other than pharmacy;

b) how many are employed only part-time, and to what extent;

c) how many leave the practice each year; and

d) how many possess the specific qualifications that are being sought by employers.

In Florida, about 700 pharmacists are newly licensed each year, but data is not available to show how many of the 700 actually enter practice in the State of Florida. (Of the 700, usually 150 or so are graduates of the state's two colleges of pharmacy.)

In recent years, the percentage of women students accepted to programs in colleges of pharmacy has risen to almost 60%. Projections estimate that in the next 10 years women will represent about one-third of the professional work force -- and data reveals that females work about 70-75% the equivalent time of their male counterparts. The expected impact of this phenomenon is a decrease in the total manpower pool.

The national average pharmacist-to-population ratio, according to 1980 Census data, is about 64/100,000. If Florida were to use that figure as a goal, some of the missing data noted above would be required to calculate the actual ratio existing in Florida. Furthermore, if the unusually large elderly population residing in Florida is taken into consideration, a population which has increased health care needs, and if the impact of the new Florida Pharmacist Prescribing Law is also taken into consideration it might be argued that the Florida pharmacist-to-population ratio should be higher than the national ratio.

Therefore, it is the opinion of the consultants that further studies are needed to fill the existing information gap and to provide the basis for future projections of pharmacy manpower needs in Florida. It is recommended,

therefore, that BOR studies be initiated and funded during the coming year to collect the data needed to project Florida's future manpower needs in pharmacy. Such studies should be conducted by unbiased experts and should be used to form the basis for decisions such as new program development, program growth, etc. While increasing enrollments in Florida colleges may be possible through expanded recruitment campaigns and installation of new programs, such efforts should be supported with well documented needs-assessments such as the study could provide.

C. DELIVERY OF PROGRAMS

The third systemwide topic for this review is the issue of the delivery of pharmacy education opportunities in Florida. As mentioned above, the consultants believe that any real expansion of programs should be curtailed until the proposed manpower needs study has been accomplished. Nevertheless, there will be a continuing need to increase clinical sites as the Pharm.D. programs increase, thus a certain amount of growth of presence is inevitable. There will also be a need for extended continuing education opportunities as pharmacists become more involved in their increasing roles as clinicians, and these programs must be planned for as well.

FAMU already has an extensive clinical relationship with the medical complex in Miami. Their relationships with the University of Miami Medical School, the Veterans Administration Medical Center and Jackson Memorial Hospital are excellent. The FAMU goal has been to significantly expand those clinical programs, and their self-study states:

> "The College set about to entrench itself in the Miami area, with the aim of establishing a Center for the College of Pharmacy in Miami, with classroom facilities, student housing, clinical sites, and research

laboratories manned by full-time faculty, working under the Dean of the College in Tallahassee."

Although the consultants feel that so extensive an operation would overtax the present faculty resources, FAMU has fostered a significant presence in Miami and would have no difficulty in increasing its ability to place students in clinical rotations and to establish additional adjunct faculty relationships among the many professionals there.

However, any attempt to establish new schools of pharmacy in the Miami area would hinge upon a need, and that need has not been documented. Therefore, it is mandatory that a manpower needs assessment be conducted prior to committing resources to establish any new pharmacy programs in the state. In addition to determining manpower needs, it is also advised that an examination of the many factors connected with the establishment of new educational facilities be conducted in concert with the needs assessment. Those factors to be reviewed should include:

a) the ability of the current colleges of pharmacy to increase their enrollments;

b) the costs associated with expansion of existing programs to fulfill the documented need;

c) a comparison of the costs of expanding existing programs with the costs of opening a new college;

d) the impact of opening new colleges on the existing colleges;

e) the availability of qualified faculty for program expansion;

f) the availability of a large enough pool of qualified applicants to support both new and existing programs; and,

g) the availability of clinical training sites to support any new programs.

Pursuant to the gathering of the information required to support the decision derived from the above-suggested studies, both of the present colleges, as resources allow, should be permitted to increase enrollments in response to the presently-perceived manpower demands. Each of the colleges has expressed the capability of increasing the enrollment of qualified applicants at their present facilities, and evidence also assures that they can accommodate an increased number of students at the clinical training sites already in place.

But the issue of new areas of delivery includes the student applicant pool as well as professional needs. Indications are that both existing schools are accepting all of the qualified applicants they receive; and enrollments are declining nationwide, as the following table indicates.

Enrollment Trends in Entry Pharmacy Programs

NATIONAL PHARMACY STUDENT ENROLLMENT

YEAR	1975	1980-1	1981-2	1982-3	1983-4	1984-5
TOTAL	23,355	22,039	20,468	19,350	18,831	18,646
% Decline		5.63	7.13	5.46	2.68	0.98
% Female	33	46	49	51	52.6	54.5
In Entry Pharm.D.	1,226	1,724	1,878	2,082	2,243	2,635

What remains to be seen is whether or not enrollments at FAMU and UF can be increased, should a manpower study indicate a need. If not, then the attracting of graduates from out-of-state will have to be increased for Florida to address that need.

V. APPENDICES

APPENDIX A
VITAE OF CONSULTANTS

ROBERT D. GIBSON

Robert D. Gibson, born in Tacoma, Washington, received his Bachelor of Arts degree in Chemistry from the University of Oregon, and a Bachelor of Science degree in Pharmacy from the University of California prior to receiving the Doctor of Pharmacy degree from the University of California in 1958.

He has been a member of the faculty of the School of Pharmacy, University of California, San Francisco since 1962, has served as Director of the Pharmaceutical Technology Laboratory, UCSF, as Associate Dean, Student Affairs, and is presently Associate Vice Chancellor for Student Academic Affairs and Registrar. His professional career has included practice in community, hospital and industrial pharmacy.

Dr. Gibson is immediate Past President of the American Association of Colleges of Pharmacy and has held office in several professional and scientific associations, both national and regional. His activities also include service to editorial boards of professional and scientific journals including the American Pharmaceutical Association (American Pharmacy), Journal of Pharmaceutical Sciences, and International Pharmaceutical Abstracts of the ASHP.

In addition to his contributions to the University of California he has contributed extensively to governmental agencies and the private sector including one year as a consultant in residence to the Office of Research and Statistics, Department of HEW; as a technical reviewer for grant applications for the Health Professions Education Section of HEW and the Health Career Opportunity Program of the Department of Health and Human Services. Additionally, he has served as a member of the State of California Office of Health Care Services, Medical Therapeutics and Drug Advisory Committee serving as a pioneer in the development of the Medi-Cal program. He has also served as a consultant to the pharmaceutical industry and to Harcourt, Brace, Jovanovich, Inc., publishers.

Dr. Gibson has also received recognition as a distinguished educator, administrator, alumnus and practitioner. As a recipient of a Fulbright-Hayes Scholar Award, he spent one year as Visiting Professor in Pharmaceutical Technology at Cairo University, UAR. In addition, he has received the Distinguished Alumnus Award from the University of California School of Pharmacy, the Man of the Year Award from a national professional society (PPSI), and a honorary Doctor of Science from the Massachusetts College of Pharmacy and Allied Health Sciences.

His scholarly and professional interests are indicated by the wide spectrum of subjects included in his publications: pharmaceutical technology, drug utilization review, the delivery of health care to the poor and minority recruitment.

CURRICULUM VITA

Personal

Name: Howard C. Ansel
Birth: October 18, 1933; Cleveland, Ohio
Family: Married, 1960, three children

Present Position

Dean and Professor, College of Pharmacy, University of Georgia

Education

University of Toledo, 1955, B.S., Pharmacy, cum laude
University of Florida, 1957, M.S., Pharmacy
University of Florida, 1959, Ph.D., Pharmaceutics and Pharmaceutical Chemistry

Academic Appointments

Professor and Dean, College of Pharmacy, University of Georgia, 1977-
Professor and Head, Department of Pharmacy, University of Georgia, 1968-77
Associate Professor of Pharmacy, University of Georgia, 1965-68
Assistant Professor of Pharmacy, University of Georgia, 1962-65
Assistant Professor of Pharmacy, University of Toledo, 1959-62

Honors, Societies, and Professional Memberships

Rho Chi Honorary Pharmacy Society (Member, National Board of Directors, 1975-76)
Sigma Xi Research Society
Phi Kappa Phi Honor Society (President, University of Georgia Chapter, 1980-81)
Gamma Sigma Epsilon Chemistry Honor Society
Fellow, American Foundation for Pharmaceutical Education, 1957-59
Biographee, Outstanding Educators of America, 1973-
Biographee, American Men and Women of Science, 1975-
Biographee, Who's Who in the South and Southwest, 1975-
Recipient, Mead Johnson Research Award, 1966-67
Recipient, Lumsford Richardson Research Award, 1966-67
American Pharmaceutical Association
Academy of Pharmaceutical Sciences
American Association of Colleges of Pharmacy
Georgia Pharmaceutical Association
Georgia Society of Hospital Pharmacists
Atlanta Academy of Institutional Pharmacists

Pharmacy License

States of Georgia, Ohio, and Florida

Professional Activities

Member, Publications Committee, Academy of Pharmaceutical Sciences, 1976-78
Contributor, National Association of Boards of Pharmacy and Educational Testing Service, NABPLEX Licensure Examination, 1976-
Member, Advisory Committee on Revision, Handbook of Non-Prescription Drugs, American Pharmaceutical Association, 1975, 1977, 1979, 1981
Chairman, Policy and Planning Committee, Georgia Pharmaceutical Association, 1975-76; Future of Pharmacy Committee, 1977-79; Scholarship Committee, 1977-
Georgia Pharmaceutical Association's Representative to the Regional Advisory Group, Georgia Regional Medical Program (GRMP), 1975-
Committee on Keys and Certificates, National Rho Chi Society, 1974
Drug Abuse Educator, Department of Education, State of Georgia, 1973-75
Special Consultant, Food and Drug Administration, Panel to Evaluate OTC Antacids, 1972-74
Chairman, Awards and Annual Lecture Committee, National Rho Chi Society, 1973-75
Team Member, Evaluation Site Visits, American Council on Pharmaceutical Education, 1977-82

American Association of Colleges of Pharmacy:
Delegate, House of Delegates Chairman-Elect, Council of Deans, 1985-86 Executive Committee, Conference of Teachers, 1970-71 Chairman, Section of Teachers of Pharmacy, 1969-70 Vice Chairman, Section of Teachers of Pharmacy, 1968-69 Committees: Membership, 1968-69; Audio Visual, 1967-71;
Resolutions, 1972-73; Government Affairs, 1977-79;
Academic Affairs, 1979-80, 1980-81, 1981-82 (Chairman) and 1982-83 (Chairman)
Accreditation Issues Committee, 1984-85

University of Georgia:
Member, University Council, 1968-70; 1977-Member, Graduate Faculty, 1965-Faculty member, Independent Study, Georgia Center for Continuing Education
Special Lecturer on Drug Abuse, University of Georgia Police Academy
Committees: University Health Service/College of Pharmacy Clinical Pharmacy; Externship; Student-Faculty; Central Research Stores; Drug Abuse; Extra-Compensation; Promotions and Tenure; Bicentennial Fund, Capital Campaign Steering Committee

Publications

Author of two textbooks in Pharmacy and a number of scientific and professional papers and articles.

CURRICULUM VITAE

Jack R. Cole
Dean
College of Pharmacy
University of Arizona

I. EDUCATION

Institution	Degree	Major	Minor	Year
University of Arizona Tucson, Arizona	B.S.with Distinction	Pharmacy	Chemistry	1953
University of Minnesota Minneapolis, Minn	Ph.D.	Pharmaceutical (Medicinal) Chemistry	Organic Chemistry & Pharmacology	1957

ACADEMIC EXPERIENCE

Institution	Title	Dates
University of Arizona College of Pharmacy	Dean College of Pharmacy	1977-
University of Arizona College of Pharmacy	Head, Department of Pharmaceutical Sciences	1975-1979
University of London Chelsea Institute of Technology	Visiting Scientist (Sabbatical Leave)	1963
University of Arizona College of Pharmacy	Professor of Medicinal Chemistry	1962-present
University of Arizona College of Pharmacy	Associate Professor of Pharmaceutical Chemistry	1958-62
University of Arizona College of Pharmacy	Assistant Professor of Pharmaceutical Chemistry	1957-58

II. PHARMACY PRACTICE EXPERIENCE, MEMBERSHIPS

Registered Pharmacist in: Arizona
California
Minnesota

Prior to assuming full time academic position, employed in various pharmacies as a registered pharmacist in the above states.

Member of: Rho Chi
Phi Lambda Upsilon
Sigma Xi

Professional Societies: American Association of Colleges of Pharmacy
American Pharmaceutical Association
American Chemical Society

III. TEACHING, RESEARCH INTERESTS

In addition to maintaing an active teaching schedule, Dr. Cole continues pursuing his research in the following areas:

1. Isolation and structure elucidation of potential pharma cologically useful agents from plants.

2. Structure activity relationships of medicinal agents.

3. Effects of drugs at the cellular level.

4. Narcotic receptor sites.

5. Invitro test systems in predicting invivo activity.

Since 1958, Dr. Cole has been principal investigator in research grants totalling over $2,000,000, and has received extensive financial support for his various other activities in program development and community service. Dr. Cole has authored or coauthored over 60 research papers, and has been an invited lecturer at over a dozen institutions throughout the country.

IV. PROFESSIONAL SERVICE

Consultant to the National Boards of Pharmacy on pharmacy examinations.
American Association of Colleges of Pharmacy Bylaws Committee.
Chairman, Council of Deans, AACP 1983-84.
Member, 1983-85 Academy of Pharmaceutical Sciences Regulations and Science Policy Committee.
Member, AACP Board of Directors, 1983-85.
Member AFPE Board of Directors, 1985-
President-Elect, AACP 1985.

APPENDIX B
NATIONAL DATA

VITAL STATISTICS 1984-85

PHARMACY

72	Schools and Colleges
18	Private
54	Publicly supported
3	Independent, Free-Standing
69	University Affiliated
63	B.S.
21	Pharm.D. as First Prof. Degree
	a) 7 Pharm.D. only
35	Offer Pharm.D. as a Post B.S. Degree
55	Schools have M.S. Programs
48	Schools have Ph.D. Programs

Source: AACP

VITAL STATISTICS 1984-85

PHARMACY

B.S. Programs:	16,772	
Pharm.D. Programs:	1,874	(B.S. Grads: 459)
Total	18,646	

55% Women, 22% Minority

Source: AACP

FALL 1984 FULL-TIME ENROLLMENT
in PROFESSIONAL DEGREE PROGRAMS

	M	F	Total
B.S.	7,622	9,150	16,772
Pharm.D.	859	1,015	1,874
Total	8,481	10,165	18,646

Source: AACP Enrollment Report on Professional Degree Programs in Pharmacy, Fall 1984

VITAL STATISTICS 1984-85

PHARMACY

M.S. Programs:	688
Ph.D. Programs:	1,496
Total	2,184

34% Women

Source: AACP

SUMMARY of GRADUATES
in Ph.D. PROGRAMS by DISCIPLINE

Pharmacy	M	F	Total
Pharmaceutics	71	33	104
Medicinal Chem.	37	8	45
Pharmacognosy	11	1	12
Pharmacology	52	16	68
Administration	13	2	15

Source: Enrollment Report on Graduate Degree Programs in Pharmacy, Fall 1984

1984

Full Time Ph.D. Enrollment	1,042	454	1,496
Pharmaceutics	362	155	517
Pharm. Chem.	376	148	524
Pharmacognosy	62	28	90
Pharmacology	190	89	279
Pharm. Admin.	52	34	86
Hospital Pharm.	0	0	0

Source: AJPE, Vol 49, Summer 1985

ETHNIC GROUPING of GRADUATES
in all Ph.D. PROGRAMS

	M	F	Total
White American	105	30	135
Black American	2	0	2
Asian American	11	2	13
Native American	0	0	0
Hispanic American	5	2	7
Other American	2	0	2
Non American	45	19	64
Total	170	53	223

Source: Enrollment Report on Graduate Degree Programs in Pharmacy, Fall 1984

APPENDIX C
STANDARDS OF PRACTICE

Standards of Practice for the Profession of Pharmacy

Every profession must have a measure by which to judge its practice. This special section of American Pharmacy *represents the culmination of years of effort, guided by the American Pharmaceutical Association and the American Association of Colleges of Pharmacy, to set forth the Standards of Practice for the profession of pharmacy, as published here in their entirety.*

By SAMUEL H. KALMAN
and JOHN F. SCHLEGEL

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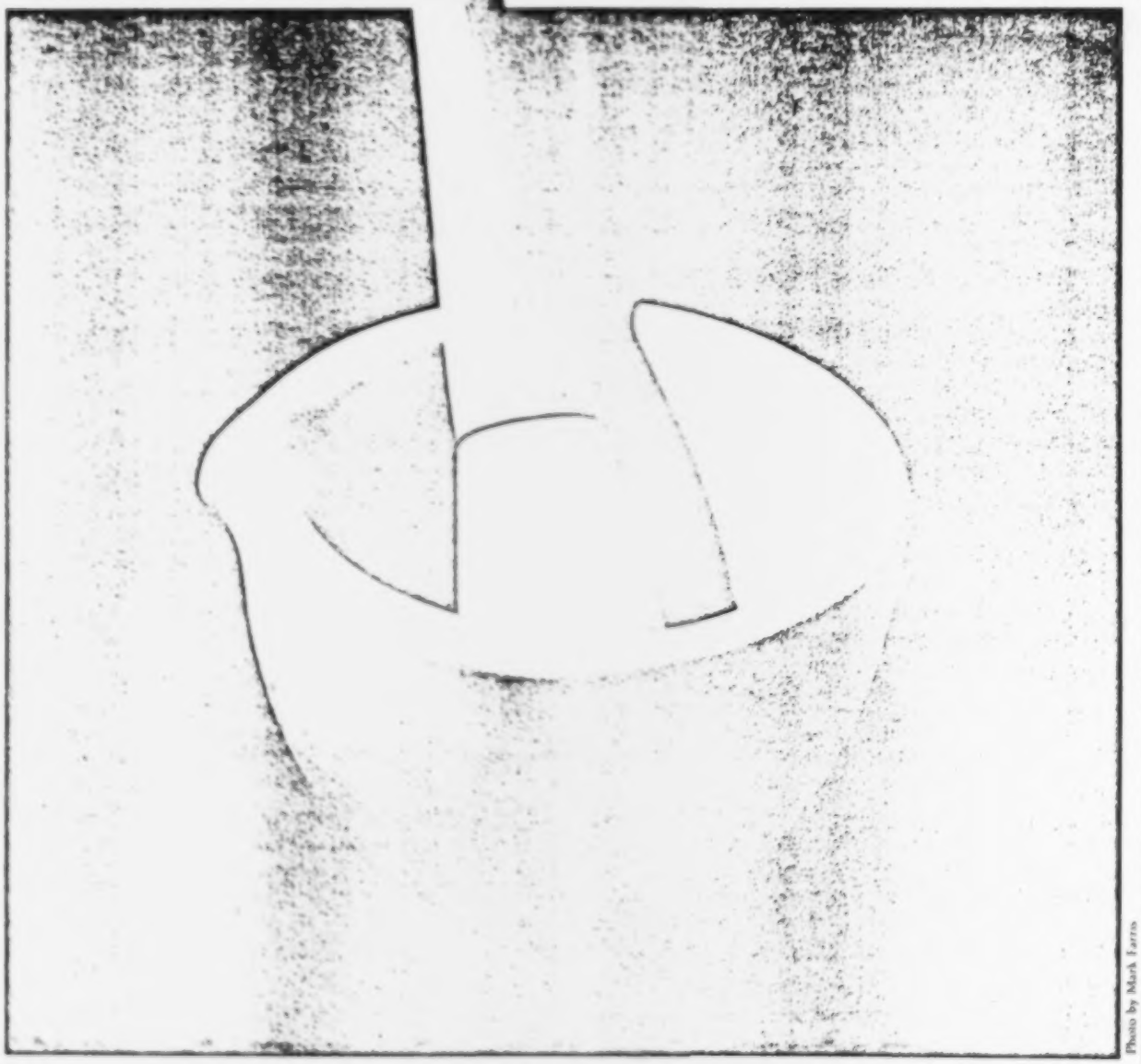


Photo by Mark Farris

Introduction: Standards of Practice

New "Standards of Practice" for the profession of pharmacy have been completed after six grueling years of work and an investment by the American Pharmaceutical Association and the American Association of Colleges of Pharmacy of more than $250,000.

These Standards, which begin on page 24, should provide the cornerstone for the future practice of pharmacy. They describe in generic terms what a pharmacist does in fulfilling the basic responsibilities of the profession.

The Standards have been developed at an opportune time:

- They will enable the profession to inform the federal government and other official agencies dealing with health care matters on exactly what constitutes comprehensive pharmaceutical service;
- Third-party payors will understand better what they should be paying for;
- The schools and colleges of pharmacy will be able to scrutinize their curricula to determine the relevancy of subject matter in their educational programs;
- Providers of continuing education will be able to identify practitioner needs more accurately and design programs around uniformly acceptable objectives.

The Standards also will provide the basis for promoting the pharmacist's role to the public; people will learn what they can expect and what they may legitimately demand in the way of pharmaceutical service. Regulatory boards can use them to review the pertinence and relevance of licensing examinations. And pharmacists will be in the enviable position of defining for other health care practitioners the scope of pharmacy practice, showing them clearly where the pharmacist's responsibilities lie in relation to the roles of these colleagues.

But the immediate use to which the Standards can be put is pharmacist self-assessment of both practice and ability to provide needed services. As they now exist, the Standards do. They give the pharmacist a basis of reference by describing the kinds of functions being performed by other similarly trained health professionals who collectively are called pharmacists. Thus the Standards point out to all pharmacists the nature of comprehensive pharmaceutical service, and they provide adequate guidance for pharmacists to investigate and prepare for delivering any new service.

Determining one's own competence by comparing present functions to those suggested by the Standards is easier than you might think. Start by becoming a "student" of your own practice:

- Read through the Standards and make the connection between what you do and what is described in the Standards;
- Identify those responsibilities on which you spend most of your time and which require a certain level of judgment;*
- Determine which responsibilities you perform most often, and use them to begin your self-assessment program;
- Analyze the judgments you are making in providing service related to the responsibilities;
- Design your program of study.

This simple procedure provides a valid and effective way to detect practice deficiencies. So get out a notebook and begin keeping a record of specific situations involving the responsibilities you have selected. Make note of the actions you take. If you decide to track several responsibilities, you may want to assign a separate page to each one. Then analyze your record by comparing what actions you took in relation to the Standards. Ask yourself whether you feel comfortable with the judgments (decisions) you are making. Did you have enough information to make the decision? Was the information up-to-date?

If you decide that there is room for improvement, take the initiative to find out where information about the subject is available. You may want to contact the continuing education personnel at the college of pharmacy in your area to assist you in identifying and obtaining appropriate resources.

You can follow these self-assessment steps now; many pharmacists already do. Future plans call for developing more formal methods of self-assessment from which pharmacists may voluntarily and confidentially evaluate their own competence.

To make the Standards work, more comprehensive procedures will require cooperation within the profession of pharmacy—from practitioners, educators, and professional associations.

First, the Standards of Practice must be widely disseminated. This publication of the Standards begins

Samuel H. Kalman, MS, is director of education, APhA professional affairs division. John F. Schlegel, PharmD, is assistant executive director of the American Association of Colleges of Pharmacy. A complete description of the history and development of the project is contained in two articles appearing in the March and April 1978 issues of American Pharmacy.

*The level of judgment that you as a pharmacist must apply to deal effectively with a specific responsibility may:

- Require only ability to *recall, recognize,* and *interpret* specific pharmaceutical information;
- Require the ability to *apply* knowledge to *new or changing* situations;
- Require the ability to *analyze information, and to distinguish facts from assumptions* before acting;
- Require the ability to *put information together* to arrive at solutions to problems and to *evaluate* the usefulness of these solutions.

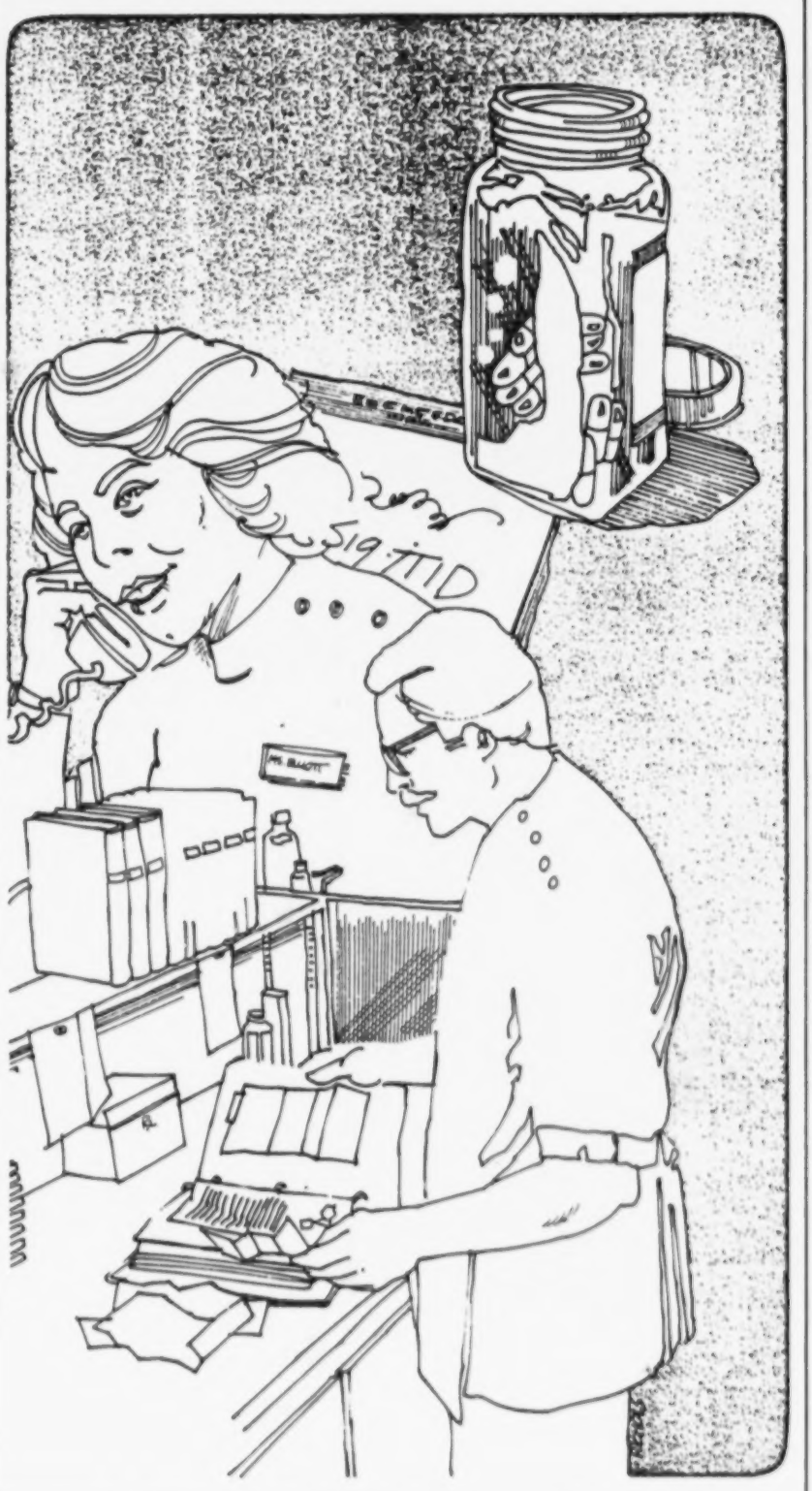
that process. As revisions or modifications are called for or as new standards evolve, they too will be published. Standards of practice are expected to be as dynamic as the profession of pharmacy itself.

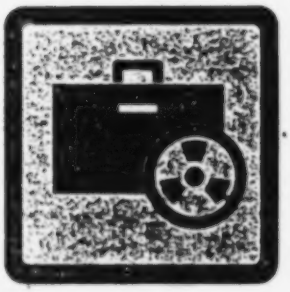
Second, practitioners must be given an opportunity to determine, in a confidential and voluntary way, how well they fulfill the responsibilities covered by the Standards. The development of a self-assessment program to be made available to pharmacists is the next order of business. Phase two of the joint AACP/APhA project calls for the development of a bank of self-assessment items that can be used in developing such programs.

Third, programs designed to "fill the gap" in the pharmacist's self-appraised competence must be made accessible to practitioners. As feedback of pharmacists' self-assessment activities reaches the providers of continuing professional education, these educators will be responsible for establishing programs that will help practitioners maintain their competence to practice.

Finally, pharmacists should be able to determine how well they have developed their new competencies. Methods by which practitioners can demonstrate that they maintain the needed competencies of a pharmacist will have to be explored.

The profession has completed the first phase of its Continuing Competence in Pharmacy Project with the publication of the Standards of Practice. Eventually, through the initiative of individual pharmacists as well as collective action by the profession, pharmacists will be able to use the Standards to identify their own educational needs and map out their own learning programs to maintain competence. In so doing, they and the profession will move closer to the goal of having pharmacists assume primary responsibility for their own ongoing professional education. The four major areas of responsibility for pharmacists are broken into the following Sections:





Section I. General Management And Administration Of the Pharmacy

Selects and supervises pharmacists and nonprofessionals for pharmacy staff; establishes a pricing structure for pharmaceutical services and products; administers budgets and negotiates with vendors; develops and maintains a purchasing and inventory system for all drugs and pharmaceutical supplies; initiates a formulary system. In general, establishes and administers pharmacy management, personnel, and fiscal policy.

Responsibility No. 1: Establishes and/or implements written policies and procedures for pharmacy operations (30).

Tasks:

1. Identifies each specific pharmaceutical function performed.
2. Within each functional area develops specific policies and procedures consistent with legal, institutional, and/or professional guidelines.
   (a) Assures that the format of each policy or procedure is uniform.
   (b) Uses sufficient detail to express each concept or topic.
   (c) Clearly states circumstances, conditions, and personnel that are covered by (or subject to) each policy and/or procedure.
   (d) Clearly states where performance of a procedure is limited to certain personnel.
   (e) Assures that policies and procedures are consistent with established job descriptions.
   (f) Assures that the policies and procedures do not duplicate or conflict with one another.
3. Organizes policies and procedures to allow a quick and logical method for reference.
4. Subjects policies and procedures to appropriate review process.
5. Generates and distributes policies and procedures to appropriate personnel.
   (a) Identifies where and to whom copies of policies and procedures are to be distributed.
   (b) Updates distribution list when appropriate.
6. Educates the staff regarding scope and content of the policies and the proper use of policies as a reference and/or job aid.
   (a) Orients new employees.
   (b) Provides periodic in-service and/or refresher training for current employees.
7. Periodically reviews and updates policies and procedures.

Responsibility No. 2: Plans or assists in the design and the layout of physical facilities for pharmacy (31).

Tasks:

1. Evaluates the functions to be performed in the practice setting.
2. Plans for reasonable physical space for each function unit in coordination with physical arrangement to give the best work flow.
3. Plans for the comfort and convenience of the patient and/or personnel.
4. Creates an environment conducive to patient/pharmacist and health professional/pharmacist interaction.
5. Develops a good traffic flow pattern where applicable.
6. Periodically re-evaluates space allocations.

Responsibility No. 3: Reviews operations of the pharmacy for compliance with local, state, and federal laws and regulations (33).

Tasks:

1. Maintains current copies of all regulations.
2. Reviews all regulations on a periodic regular basis.
3. Conducts physical inspection of pharmacy facilities to insure compliance.
4. By observation, verifies that personnel in the pharmacy are performing their responsibilities in compliance with regulations.

Responsibility No. 4: Develops and implements an appropriate pharmacy security system to prevent theft and/or drug diversion (34).

Tasks:

1. Evaluates practice site history and setting to determine overall security needs.
2. Establishes a secure physical environment.
3. Establishes internal controls and procedures as indicated.
4. Periodically reviews security needs and makes adjustments in physical environment and internal procedures as indicated.

Responsibility No. 5: Establishes a pricing structure for pharmaceutical

Note: The number in parentheses following each responsibility refers to the responsibility number as it appeared initially on the questionnaire used in the national survey of pharmacists.

services and products (35).

Tasks:
1. Establishes a pricing structure based on sound management principles which would provide a "fair and reasonable" return on investment.
2. Periodically reviews pricing structure and revises as indicated.

Responsibility No. 6: Initiates a formulary system to meet the needs of patients and practitioners (36).

Tasks:
1. Determines whether informal (unwritten) or formal (written) formulary system is appropriate.
2. Determines patient and practitioner population to be served by formulary system.
3. Determines guidelines for inclusion in the formulary.
   (a) Determines manufacturing source(s).
   (b) Determines whether drug has potential for inequivalence.
   (c) Determines cost differential for different sources.
   (d) Determines manufacturer reliability.
   (e) Determines whether there is a great difference in formulation among products (e.g., taste, ointment/cream base).
   (f) Determines allergenicity of product.
   (g) Inspects product for defects.
   (Further quantification of these elements may be found in Section II, Responsibility No. 6: Selects the manufacturing source of drug(s)/ product(s) to be dispensed for a prescription order written in generic terminology; Tasks 1,2,4,5,6,7, and 8.)
4. Implements and administers the formulary.
   (a) Educates health care practitioners of formulary system.
   (b) Develops procedures for handling addition to or deletion from the formulary.
   (c) Initiates procedures for obtaining nonformulary drugs.
5. Periodically reviews formulary, revising as necessary.

Responsibility No. 7: Establishes and maintains an ongoing cost analysis program (37).

Tasks:
1. Implements an effective accounting system.
2. Identifies cost centers: prescription, nonprescription (e.g., sundries, cosmetics).
3. Develops cost information retrieval system.
4. Utilizes and evaluates the information generated.

Responsibility No. 8: Maintains and reconciles accounts receivable from various third-party payors (38).

Tasks:
1. Maintains a record system for third-party receivables.
2. Completes appropriate billing process.
3. Reconciles differences between charges submitted and payments received.
4. Corrects and resubmits claim.

Responsibility No. 9: Prepares and/or participates in the preparation of the budget and its controls in providing for pharmacy services (39).

Tasks:
1. Reviews previous budget to evaluate adequacy in meeting needs.
2. Projects changes in budget for previously budgeted items.
3. Determines additions and/or deletions with justifications to previous budget.
4. Establishes procedures for periodically reviewing and evaluating performance with respect to budget.

Responsibility No. 10: Reviews and/or prepares periodic reports of pharmacy's fiscal performance in relation to budget (40).

Tasks:
1. Establishes frequency of periodic reports.
2. Collates fiscal and budgetary data.
3. Evaluates performance against budget.
4. Prepares fiscal/budget reports.

Responsibility No. 11: Develops and maintains an inventory system for all drugs, pharmaceutical supplies, etc., in active and inactive storage areas (41).

Tasks:
1. Establishes inventory goals.
2. Selects appropriate method of inventory control.
3. Develops method for maintaining optimal stock levels.
4. Periodically reviews inventory goals, method of inventory control, and optimal stock levels.

Responsibility No. 12: Establishes and monitors a system to insure proper storage conditions for perishable pharmacy items (42).

Tasks:
1. Identifies all items requiring special storage.
2. Establishes equipment necessary to meet storage requirements in all drug storage areas.
3. Establishes receiving procedures for the handling of special storage drugs.
4. Establishes procedures to monitor the proper storage of special storage drugs.
5. Establishes procedures to monitor the operation of special storage drug equipment.

Responsibility No. 13: Develops and maintains a system for the regular removal from storage areas of all pharmaceutical items that are outdated or whose manufacture has been discontinued (43).

Tasks:
1. Regularly reviews professional literature for recalled and/or discontinued items.
2. Systematically reviews dating on all dated items in stock.
3. Disposes of removed items in an appropriate manner.

Responsibility No. 14: Assists in design or implementation of computer systems for use in the pharmacy (e.g., patient records, inventory control, drug utilization) (47).

Tasks:
1. Determines feasibility of using a computer to meet pharmacy needs.
2. Defines the functions the computer is to perform.
3. Defines format of output necessary to meet pharmacy needs.
4. Determines cost/benefit ratio of alternative systems.

5. Insures that operators use the system competently.
6. Monitors system for efficiency.

Responsibility No. 15: Establishes drug quality specifications for drugs to be purchased (48).

Tasks:
1. Determines manufacturing sources.
2. Determines manufacturer reliability.
   (a) Assesses quality control data.
   (b) Reviews recall records.
   (c) Inspects product for defects.
3. Develops list of criteria for identifying potential inequivalence.
   (a) Consults references which rate potential inequivalence (e.g., FDA information).
   (b) Determines whether drug has low water solubility.
   (c) Determines whether condition being treated needs high or critical serum levels.
   (d) Determines whether drug has narrow therapeutic index.
   (e) Determines whether formulation is designed for delayed absorption.
   (f) Assesses bioavailability data, if available.
4. Develops quality specifications for evaluating differences in formulation among products (e.g., taste, ointment/cream base).
5. Inspects products for defects.

Responsibility No. 16: Determines primary and alternate vendors for pharmaceutical supplies (49).

Tasks:
1. Determines buying policy.
2. Evaluates vendor programs.
3. Institutes buying program to maximize cost effectiveness.

Responsibility No. 17: Prepares and/or reviews purchase orders (both routine and emergency) (50).

Tasks: (none)

Responsibility No. 18: Negotiates with vendors regarding cost, delivery schedule, etc. (51). Tasks: (none)

Responsibility No. 19: Verifies that purchases received from vendor conform to the specifications on the original purchase order and authorizes payment (52).

Tasks:
1. Compares items ordered with items received.
2. Compares invoiced items with items received and marks according to established policy.
3. Verifies correctness of prices.
4. Verifies correctness of invoice extension and total.
5. Approves payment.

Responsibility No. 20: Establishes, administers, and interprets personnel policies and procedures (53).

Tasks:
1. Develops and promulgates written employee policies and procedures.
2. Explains personnel policies to all employees.
3. Administers policies and procedures.
4. Establishes feedback apparatus to evaluate policies.
5. Evaluates compliance with policies and procedures.
6. Where necessary, counsels with employees.

Responsibility No. 21: Prepares written job descriptions for pharmacists and nonpharmacists on pharmacy staff (54).

Tasks:
1. Develops an organizational chart.
2. Prepares job descriptions.
   (a) States title, duties, and responsibilities.
   (b) States any limitations.
   (c) Identifies the department and the immediate supervisor.
3. Consults with each employee to insure understanding of the job duties.
4. Develops a mechanism for revision of job descriptions as circumstances and personnel needs dictate.

Responsibility No. 22: Recruits, interviews, selects, and hires pharmacists and nonpharmacists for pharmacy staff (55).

Tasks:
1. Establishes a continuous recruitment program using multiple channels and methods (e.g., newspapers, employees, schools, other referrals).
2. Uses a selection process (interviews, tests, evaluation of training and experience) which identifies able prospective employees and conforms to legal guidelines.
3. Maintains appropriate records (sex, race, etc.) on applicants and selected employees required by legal guidelines.

Responsibility No. 23: Instructs and trains pharmacist and nonpharmacist staff in carrying out assigned responsibilities (56).

Tasks:
1. Evaluates employee performance against established standards of performance.
2. Determines individual and group needs for training.
3. Trains and/or refers employees for appropriate training.

Responsibility No. 24: Supervises and evaluates job performance of pharmacy staff (57).

Tasks:
1. Establishes procedure for evaluating job performance of pharmacy staff consistent with legal guidelines.
2. Reviews or supervises review of evaluation of employees.

Responsibility No. 25: Schedules work hours for pharmacy staff (58).

Tasks: (none)

Responsibility No. 26: Institutes disciplinary action and/or discharges pharmacy staff for cause (59).

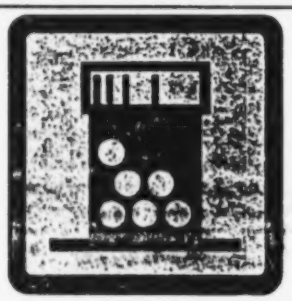
Tasks:
1. Notes violations of rules or procedures and/or identifies inadequate performance.
2. Discusses situation with employee and records results of discussion.
3. Decides whether to counsel, institute discipline, or discharge.
4. Records and documents course of action taken consistent with legal guidelines.

Responsibility No. 27: Administers wage, salary, and benefit programs for pharmacy staff (60).

Tasks:
1. Establishes wage and benefit (e.g., pay, discounts, insurance, va-

cation, sick leave, holidays) policies consistent with competitive factors, legal requirements, and budgetary constraints.

2. Assists employees in understanding and utilizing the wage, salary, and benefit program.
3. Determines salary adjustments to the wage and benefit package, based on evaluation of employee performance, in a fair and equitable manner.



Section II. Activities Related To Processing The Prescription

Verifies prescription for legality and physical and chemical compatibility; checks patient record before dispensing prescription; measures quantities needed to dispense prescription; performs final check of finished prescription; dispenses prescriptions.

Responsibility No. 1: Determines necessity of immediately handling the preparation and delivery of the medication to the patient (emergency or stat) (1).

Tasks:

1. Receives a request for an immediately needed drug.
2. Screens prescription order to determine priority of handling prescription.
   (a) Determines therapeutic category of prescription medication(s).
   (b) Determines regulatory responsibilities.
   (c) Determines route of administration.
3. Gathers additional information about the situation to determine immediacy of the need.
   (a) Observes the patient condition.
   (b) Questions patient or patient's agent to determine:
      (i) Patient complaint.
      (ii) Whether problem is of an acute nature.
      (iii) Whether patient received starter or "stat" dose.
   (c) Questions other appropriate sources where necessary.

Responsibility No. 2: Verifies prescription order for completeness and legality (2).

Tasks:

1. Checks prescription order to verify that it can be legally filled. Verifies that order is written by a person authorized to prescribe, checking the following items:
   (a) The prescriber is identified.
   (b) The prescriber is licensed/authorized to prescribe by the appropriate agency.
   (c) The prescriber has ordered medication that is within his/her legal privileges.
   (d) The prescription is not forged.
   (e) The date of the prescription order is within legal limits.
   (f) Other legal requirements of the prescription have been met (e.g., name, address).
2. Checks for completeness of prescription order. Checks to see that the following are legibly included on the prescription:
   (a) Name of medication.
   (b) Number of dosage units to be dispensed (when appropriate).
   (c) Dosage form and strength.
   (d) Complete directions that insure rational drug usage.
   (e) Item described is allowable under formulary, where applicable.
   (f) Route of administration delineated.
   (g) Third-party payor identification number.
3. Obtains additional information necessary to make prescription order complete and legal.
   (a) Interviews patient for additional information.
   (b) Calls prescriber to obtain necessary information.
   (c) Calls appropriate person(s) and/ or agency to obtain additional information.

Responsibility No. 3: Verifies prescription order for amount per dose, appropriate route, frequency, and duration of therapy (3).

Tasks:

1. Evaluates the dose.
   (a) Verifies dose as falling within therapeutic ranges.
   (b) Verifies dose as nontoxic.
   (c) Determines that dose is practical to measure and administer.
   (d) Determines physical availability of dosage.
2. Evaluates route of administration.
   (a) Verifies dose as falling within therapeutic ranges.
   (b) Verifies dose as nontoxic.
   (c) Determines that dose is practical to measure and administer.
   (d) Determines physical availability of dosage.
3. Evaluates the frequency of dosage administration.
   (a) Checks that the total daily dose (amount/dose × frequency) is therapeutic and nontoxic.
   (b) Obtains information from patient and other sources regarding disease state being treated.
   (c) Evaluates whether frequency

of administration is consistent with disease state being treated.
(d) Evaluates whether frequency of administration is consistent with the drug and dosage form characteristics.
(e) Evaluates the duration of therapy for inappropriateness.
4. Consults with prescriber to provide suggestion for alteration(s) of order.

Responsibility No. 4: Verifies prescription order for physical and chemical compatibility (4).

Tasks:
1. Verifies that quantity of vehicle (diluent, IV fluid) is appropriate to the drug(s).
(a) Confirms that drug(s) is (are) soluble in ordered quantity of vehicle.
(b) Confirms that drug(s) is (are) stable in ordered quantity of vehicle.
2. Verifies that concentration of vehicle is appropriate to the drug(s).
(a) Confirms that drug(s) is (are) soluble in ordered quantity of vehicle.
(b) Confirms that drug(s) is (are) stable in ordered quantity of vehicle.
3. Verifies that type of vehicle is appropriate to the drug(s).
(a) Confirms that pH of vehicle is compatible with drug(s).
(b) Confirms that drug(s) is (are) soluble/miscible in ordered type of vehicle.
(c) Confirms that drug(s) is (are) stable in ordered type of vehicle.
4. Verifies that order contains no drug-drug incompatibilities.
(a) Checks that pHs of drugs are compatible.
(b) Checks that mixture will not chelate.
(c) Checks that mixture will not precipitate.
(d) Checks that drugs will not inactivate each other.
5. Verifies that preservative(s) is (are) compatible with order.

Responsibility No. 5: Checks patient record for pertinent patient information before dispensing prescription medication (5).

Tasks:
1. Verifies that records pertain to the correct patient.
2. Checks prescription order against patient drug sensitivities/allergies.
3. Checks compatibility of prescription order with current patient diagnosis.
4. Checks prescription order against patient profile data for presence of interactions.
(a) Drug-drug interaction.
(b) Drug-diet interaction.
(c) Drug-lab interaction.
(d) Drug-disease interaction.
(e) Inappropriate concurrent prescribing.
5. Checks patient statistics to determine whether any factors will affect response to drug.
(a) Weight.
(b) Age.
(c) Race.
(d) Sex.
(e) Occupation.

Responsibility No. 6: Selects the manufacturing source of drug(s)/product(s) to be dispensed for a prescription order written in generic terminology (6).

Tasks:
1. Determines manufacturing source(s) of generic order.
2. Determines whether the order contains any drug(s) which has (have) potential for inequivalence.
(a) Consults reference(s) which rate(s) potential inequivalence (e.g., FDA information).
(b) Determines whether drug has low water solubility.
(c) Determines whether condition being treated needs high or critical serum levels.
(d) Determines whether drug has narrow therapeutic index.
(e) Determines whether formulation is designed for delayed absorption.
(f) Assesses bioavailability data, if available.
3. Determines whether patient has taken specific brand of drug before or chronically.
(a) Refers to patient record.
(b) Communicates with patient or practitioner.
4. Determines cost differential for different sources.
5. Determines manufacturer reliability.
(a) Assesses quality control data.
(b) Reviews recall records.
6. Determines whether there is a great difference in formulation among products (e.g., taste, ointment/cream base).
(a) Ascertains whether patient/condition needs certain formulation.
7. Determines whether patient is allergic to nondrug components of product.
(a) Selects brand which is allergen free.
8. Inspects product for defects.
9. Communicates change or choice of brand to patient/practitioner if legally or ethically indicated.
10. Makes notation on prescription order indicating specific drug product and manufacturer selected.

Responsibility No. 7: Selects the manufacturing source of drug(s)/product(s) to be dispensed for a brand name prescription order in those cases where legally authorized (7).

Tasks:
1. Determines manufacturing source(s) of generic order.
2. Determines whether the order contains any drug(s) which has (have) potential for inequivalence.
(a) Consults reference(s) which rate(s) potential inequivalence (e.g., FDA information).
(b) Determines whether drug has low water solubility.
(c) Determines whether condition being treated needs high or critical serum levels.
(d) Determines whether drug has narrow therapeutic index.
(e) Determines whether formulation is designed for delayed absorption.
(f) Assesses bioavailability data, if available.
3. Determines whether patient has taken specific brand of drug before or chronically.
(a) Refers to patient record.
(b) Communicates with patient or practitioner.

4. Determines cost differential for different sources.
5. Determines manufacturer reliability.
   (a) Assesses quality control data.
   (b) Reviews recall records.
6. Determines whether there is a great difference in formulation among products (e.g., taste, ointment/cream base).
   (a) Ascertains whether patient/condition needs certain formulation.
7. Determines whether patient is allergic to nondrug components of product.
   (a) Selects brand which is allergen free.
8. Inspects product for defects.
9. Communicates change or choice of brand to patient/practitioner if legally or ethically indicated.
10. Makes notation on prescription order indicating specific drug product and manufacturer selected.

Responsibility No. 8: Measures quantities needed to dispense the prescription (8).

Tasks:
1. Measures and counts oral dosage forms.
   (a) Selects and cleans appropriate equipment.
   (b) Observes usual precautions for proper drug handling.
   (c) Measures out or counts appropriate amount.
2. Measures appropriate substances needed for extemporaneous compounding.
   (a) Selects, cleans, and calibrates needed equipment.
   (b) Observes usual precautions for proper drug handling.
   (c) Measures out or counts appropriate amount.
   (d) Performs appropriate calculation.
3. Annotates on prescription order the calculations made.
4. Selects prepackaged unit-of-use item.
   (a) Removes non-patient-oriented labels and inserted materials.
   (b) Checks for completeness of product (e.g., inserter with vaginal products).
   (c) Checks quantities in prepared sizes.

Responsibility No. 9: Compounds the prescribed ingredients according to prescription formula or instructions (9).

Tasks:
1. Selects appropriate equipment and environment.
2. Cleans preparation area before and after compounding.
3. Mixes ingredients in proper sequence.
4. Performs the steps necessary to produce a pharmaceutically elegant product.
5. Follows aseptic techniques where necessary.

Responsibility No. 10: Reconstitutes lyophilized or powdered pharmaceuticals into a dosage form suitable for administration (10).

Tasks:
1. Prepares a pharmaceutical product for reconstitution by loosening powder.
2. Selects and adds proper diluents; shakes to insure complete mixing.
3. Checks for complete solution or suspension.

Responsibility No. 11: Performs packaging and labeling functions to promote product stability (11).

Tasks:
1. Selects appropriate package for medication.
   (a) Package will be of appropriate size.
   (b) Package meets storage requirements.
   (c) Package meets legal requirements.
   (d) Package meets patient requirements.
2. Transfers measured number of dosage units to prescription container.
3. Closes/seals prescription container(s).
4. Selects proper storage labeling.
5. Notates on prescription order if non-child-resistant container was dispensed.

Responsibility No. 12: Selects appropriate labeling for prescription container and includes patient instructions (12).

Tasks:
1. Prepares primary label.
   (a) Meets all legal requirements.
   (b) Contains clear, concise, and comprehensive instructions to patient.
   (c) Is legible and professional in appearance.
2. Chooses appropriate auxiliary labels reinforcing or supplementing instructions on primary label.
3. Affixes appropriate (proper) label(s) to product.
4. Makes notations on prescription order to insure consistent future labeling.
   (a) Notes what labeling instructions used.
   (b) Notes size and type of container used.

Responsibility No. 13: Performs a final check of the finished prescription to insure that each of the steps has been accomplished accurately (13).

Tasks:
1. Checks prescription label for accuracy against prescription order.
   (a) Verifies patient name is correct.
   (b) Verifies directions are correct.
   (c) Verifies medication and dosage form are correct.
   (d) Verifies expiration date of medication.
   (e) Verifies dispensing date.
   (f) Verifies prescriber.
   (g) Initials prescription label if necessary.
2. Checks medication for accuracy against prescription order.
   (a) Verifies correct medication.
   (b) Verifies correct dosage form.
   (c) Verifies correct strength.
   (d) Verifies correct manufacturer.
   (e) Verifies correct quantity dispensed.
   (f) Returns bulk container to storage area.
3. Checks auxiliary label instructions.
   (a) Reviews special storage requirements.
   (b) Reviews special administration requirements.

(c) Reviews special preparation requirements.
4. Determines price of prescription.
5. Initials and/or signs prescription.

Responsibility No. 14: Develops and maintains an inventory system for all drugs, pharmaceutical supplies, etc., in active and inactive storage (41).

Tasks:
(See Section I, Responsibility No. 11.)

Responsibility No. 15: Establishes and monitors a system to insure proper storage conditions for perishable pharmacy items (42).

Tasks:
(See Section I, Responsibility No. 12.)

Responsibility No. 16: Develops and maintains a system for the regular removal from storage areas of all pharmaceutical items that are outdated or whose manufacture has been discontinued (43).

Tasks:
(See Section I, Responsibility No. 13.)

Responsibility No. 17: Maintains a record file of current prescription orders including pertinent patient information and renewal data (44).

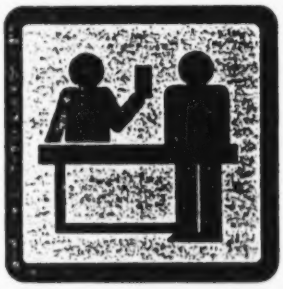
Tasks:
1. Complies with legal requirements for filing prescription orders.
(a) Records in proper form.
(b) Records stored to provide proper access and preservation.
(c) Appropriate retention policies in effect.
2. Reviews prescription order for completeness before filing.
(a) Checks prescription to determine that all legal requirements have been met.
(b) Checks that all necessary notations on labeling and container used are posted.
(c) Checks that prescription order is signed or initialed.

Responsibility No. 18: Maintains a record of controlled substances and poisons received, stored, and dispensed by pharmacy (45).

Tasks:
1. Complies with legal requirements for processing prescription orders for controlled substances.
2. Complies with legal requirements for maintaining record of over-the-counter controlled substances and poisons.

Responsibility No. 19: Prepares and/or reviews purchase orders (both routine and emergency) (50).

Tasks:
(none)



Section III. Patient Care Functions

Clarifies patient's understanding of dosage; integrates drug-related with patient-related information; advises patient of potential drug-related conditions; refers patient to other health care resources; monitors and evaluates therapeutic response of patient; reviews and/or seeks additional drug-related information.

Responsibility No. 1: Reviews and/or seeks additional drug-related information (e.g., cost, pharmacokinetic characteristics, bioavailability, common adverse effects) to identify potential problems regarding drug therapy (14).

Tasks:
1. Collects subjective and objective data to further clarify the situation.
2. Determines what type of information is needed, if any.
3. Retrieves and reviews information from appropriate sources.
4. Evaluates information obtained.

Responsibility No. 2: Reviews patient-related information for potential problems regarding drug therapy (e.g., socioeconomic factors, compliance habits, disease influences) (15).

Tasks:
1. Screens existing information on patient.
(a) Reviews prior and present medical problem(s).
(b) Reviews drug usage (including OTC and prescription).
(c) Reviews patient compliance with drug regimen.
(d) Reviews drug allergies or sensitivities, i.e., date, route of administration, type of reaction.
(e) Reviews list of health care practitioners consulted.
(f) Reviews laboratory and physical examination results.
2. Collects additional information from appropriate sources if necessary.
3. Evaluates information obtained.

Responsibility No. 3: Interviews the patient or his/her representative to obtain information for entry into patient record, patient profile, or family health record (16).

Tasks:
1. Identifies patient.
2. Uses effective communication techniques in accomplishing the following:

(a) Obtains history of prior and present medical problem(s).
(b) Obtains history of drug usage (including OTC and prescription).
(c) Obtains history of patient compliance with drug regimen.
(d) Obtains history of drug allergies or sensitivities, i.e., date, route of administration, type of reaction.
(e) Obtains list of health care practitioners consulted.
(f) Verifies patient health information where possible.

Responsibility No. 4: Integrates drug-related with patient-related information in order to determine appropriate course of action (e.g., timing of dosage schedule, advising patient of possible adverse effects) (17).

Tasks:
1. Determines whether patient is predisposed to side effect because of disease state(s).
2. Determines whether potential exists for a significant drug interaction.
3. Determines whether patient manifests signs and/or symptoms of potential problems.
4. Assesses significance of potential problem(s) regarding drug therapy.
5. Determines alternative(s) to present regimen.

Responsibility No. 5: Confirms and further clarifies patient's understanding of medication dosage, dosage frequency, and method of administration (18).

Tasks:
1. Assesses level at which to communicate with patient.
2. Determines whether patient understands how to use medication.
3. Ascertains from patient and/or records factors affecting compliance. Determines:
   (a) Life style (e.g., sleeping hours, working hours, eating schedule).
   (b) Compliance history.
   (c) Attitude toward disease and medication.
   (d) Physical and/or mental impairments.
   (e) Socioeconomic constraints.
   (f) Living conditions.
4. Determines whether potential compliance problem exists.
5. Determines appropriate dosing regimen based on prescription directions, drug's characteristics, and patient's schedule, consulting with physician when necessary.
6. Explains dosing regimen to patient.
   (a) Suggests time of administration.
   (b) Explains or demonstrates method of administration.
   (c) Asks whether there are questions.
   (d) Has patient describe dosing regimen.

Responsibility No. 6: Advises patient of potential drug-related or health-related conditions which may develop from the use of the medication for which patient should seek other medical care (19).

Tasks:
1. Determine indication for drug use if possible.
2. Assesses patient's level of anxiety regarding the prescription/disease.
3. Assesses benefit vs. risk of explaining side effect and/or expected response.
4. Explains possible effects of drug use to patient.
   (a) Explains to patient how to recognize the signs and/or symptoms that indicate:
      (i) Therapeutic response.
      (ii) Therapeutic failure.
      (iii) Pertinent side effects.
   (b) Advises patient what to do if signs and/or symptoms occur.
   (c) Advises patient how to minimize side effects.
   (d) Assesses whether patient understands explanation.
5. Notifies practitioner of pharmacist/patient interaction if indicated.

Responsibility No. 7: Updates the patient's history in the patient's record from information obtained by recurring patient interviews (20).

Tasks: None.

Responsibility No. 8: Consults with patient to properly identify symptoms in order to advise patient for self-medication (21).

Tasks:
1. Identifies patient.
2. Uses effective communication techniques in identifying major symptoms of patient:
   (a) Onset of symptom.
   (b) Duration of symptom.
   (c) Severity of symptom.
   (d) Description of symptom.
   (e) Location of symptom.
   (f) Other associated symptoms.
   (g) Relief of symptom.
   (h) Self-treatment history.
3. Through interview, further defines symptom complex.
4. Obtains information on other medical problems, drug therapy (including OTCs), drug allergies, and sensitivities.
   (a) Through patient interview.
   (b) Through patient record.
5. Observes patient when feasible or obtains information from patient's agent.
6. Performs physical assessment (e.g., inspection of wound.)
7. Makes professional judgment as to patient's condition and need for referral (See Responsiblities No. 4 and 1).
8. Recommends a product, no treatment, or other treatment or refers to appropriate health care professional (See Responsibilities No. 6, 9 and 13).
9. Educates patient as to proper use of medications, dosage and precautions, etc. (See Responsibilities No. 5 and 6).
10. Arranges for follow-up, if necessary.
11. Makes appropriate entry into patient's record (See Responsibility No. 7).

Responsibility No. 9: Refers patient to other health care providers and/or health resources where indicated (22).

Tasks:
1. Determines need for referral.
2. Recommends appropriate professional/agency for referral based on needs and severity.
3. Selects most appropriate method to facilitate meeting of patient's needs.

Responsibility No. 10: Provides infor-

mation, treatment, and/or referral in emergency cases involving ingestion of toxic substances (23).

Tasks:
1. Maintains information system for dealing with emergency situation (e.g., poison control center, antidote chart, references).
2. Obtains information to further define the ingestion situation.
3. Evaluates information and recommends treatment or referral.

Responsibility No. 11: Continuously evaluates and monitors therapeutic response of patient to prescribed medication (24).

Tasks:
1. Determines appropriate clinical parameters to monitor:
   (a) Progress/status of disease state and its complications.
   (b) Effectiveness of therapy.
   (c) Patient compliance with all aspects of therapeutic plan.
   (d) Toxicity/adverse effects of therapeutic regimen.
2. Collects appropriate subjective and objective data in order to evaluate parameters.
3. Evaluates the data collected.
4. Recommends therapeutic regimen modification where necessary.
5. Enters evidence of monitoring and evaluation into appropriate patient record.

Responsibility No. 12: Upon request, reviews and interprets medication history to the physician, patient, or other persons involved with patient's care (25).

Tasks: None.

Responsibility No. 13: Makes recommendations regarding drug therapy to the physician, patient, or other persons involved with patient's care (26).

Tasks:
1. Makes alternate recommendations for treatment plan after evaluating data base.
2. Documents recommendations made.

Responsibility No. 14: Monitors patient records for indications of drug abuse or misuse (27).

Tasks:
1. Develops procedures for identifying drug misuse and a method for communicating information to relevant individuals.
2. Utilizes procedures to monitor patient and patient's records for signs and symptoms that might indicate abuse or misuse.
3. Institutes appropriate corrective action.

Responsibility No. 15: Participates in emergency patient care activities (28).

Tasks:
1. Assesses needs for pharmacist's involvement in emergency care activities in the practice setting.
2. Actively participates in certain emergency situations (e.g., CPR team, emergency prescription service).
3. Supports services for emergency activities (e.g., provides supplies for rescue squad and civil defense planning).

Responsibility No. 16: Advises patients on personal health matters (e.g., smoking, drug abuse) (61).

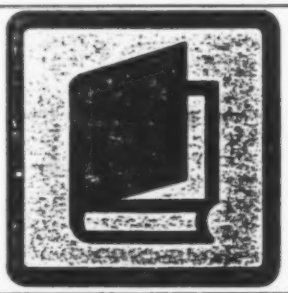
Tasks:
1. Maintains pharmacist's availability to patients.
2. Makes available health care information.

Responsibility No. 17: Instructs patients in the use of medical or surgical appliances (e.g., inhalers, colostomy bags, trusses) (62).

Tasks:
1. Possesses expertise in medical and surgical appliances and services offered by the pharmacy.
2. Maintains a private fitting room if applicable.
3. Instructs patient in the use and care of medical and surgical appliances.

Responsibility No. 18: Publicizes and/or participates in mass screening programs (e.g., hypertension, diabetes, TB, VD) (63).

Tasks:
1. Determines the need for pharmacist participation in mass screening programs.
2. Determines pharmacist's degree of participation in the program.
3. Participates in the organization, promotion, and operation of mass screening programs (e.g., publicity, mechanics of program, materials, equipment).



Section IV. Education of Health Care Professionals and Patients

Organizes, maintains, and provides drug information to other health care professionals; organizes and/or participates in "in-pharmacy" education programs for other pharmacists; makes recommendations regarding drug therapy to physician or patient; develops and maintains system for drug distribution and quality control.

Responsibility No. 1: Continuously evaluates and monitors therapeutic

response of patient to prescribed medication (24).

Tasks:
(See Section III, Responsibility No. 11).

Responsibility No. 2: Makes recommendations regarding drug therapy to the physician, patient, or other persons involved with patient's care (26).

Tasks:
(See Section III, Responsibility No. 13).

Responsibility No. 3: Participates in emergency patient care activities (28).

Tasks:
(See Section III, Responsibility No. 15).

Responsibility No. 4: Develops and implements systems for drug distribution and drug administration in institutional settings (e.g., nursing homes, hospitals) (32).

Tasks:
1. Determines need for type of drug control system (e.g., unit dose, specialized drug administration system).
2. Examines available resources (e.g., personnel, space).
3. Develops appropriate drug control system including written policies and procedures.
4. Obtains necessary resources (e.g., space, equipment, personnel).
5. Trains personnel.
6. Operationalizes system.
7. Monitors and evaluates performance of system.
8. Implements necessary changes.

Responsibility No. 5: Initiates a formulary system to meet the needs of patients and practitioners (36).

Tasks:
(See Section I, Responsibility No. 6).

Responsibility No. 6: Develops and maintains quality control records for drugs that are prepackaged, bulk compounded, sterile product formulated, etc. (46).

Tasks:
1. Identifies drugs which need quality control records (e.g., inspection, chemical analysis, lot number control, microbiological analysis).
2. Determines standards and ranges of acceptability for each drug.
3. Documents and maintains records of quality control activities.

Responsibility No. 7: Prepares and/or reviews purchase orders (both routine and emergency) (50).

Tasks:
(none)

Responsibility No. 8: Participates in appropriate community educational programs relating to health care and drugs (e.g., drug abuse, alcoholism, hypertension) (64).

Tasks:
1. Maintains pharmacist's availability for community educational programs.
2. Defines areas of participation.

Responsibility No. 9: Provides drug information to other health care professionals in a formal setting (e.g., organizes in-service educational programs, lectures, seminars, exhibits) (65).

Tasks:
1. Determines drug information needs to be met.
2. Organizes drug information into program.
3. Evaluates program.

Responsibility No. 10: Participates in utilization reviews, medical audits, and medical care evaluations (e.g., as a member of medical care evaluation committee or in peer review) (66).

Tasks:
1. Promotes pharmacy representation in quality assurance activities.
2. Participates in development of criteria and standards.
3. Participates in collection and evaluation of data.
4. Participates in initiating measures to improve the quality of patient care.

Responsibility No. 11: Assists in establishing, executing, tabulating, and evaluating clinical studies regarding drugs (67).

Tasks:
1. Participates in the design and/or conduct of studies.
   (a) Identifies questions to be studied or problems to be solved within various practice settings (e.g., community, academic, institutional).
   (b) Conducts studies recognizing the limitations of practice settings.
   (c) Disseminates findings.

Responsibility No. 12: Organizes and/or participates in "in-pharmacy" education programs for other pharmacists (69).

Tasks:
1. Identifies education/training needs.
2. Organizes training.
   (a) Identifies resources and screens for appropriateness.
   (b) Develops material, where necessary.
3. Administers training/education program.
4. Evaluates results.

Responsibility No. 13: Selects, evaluates, organizes, and maintains a current library of drug information for use of pharmacy personnel in their training and conduct of their day-to-day operations (70).

Tasks:
1. Identifies any special areas of need based on legal requirements and practice setting.
2. Identifies sources available (e.g., textbooks, journals, subscription services, retrieval systems, phone numbers of drug information/poison centers) and evaluates materials for completeness, reliability, currency, ease of use, etc.
3. Obtains and organizes sources and places in a convenient location.
4. Orients and/or trains employees.
5. Periodically updates materials.

Responsibility No. 14: Serves as a member of governmental health boards (e.g., mental health board, health systems agencies) (71).

Tasks:
1. Maintains pharmacist's availability.
2. Competently performs tasks expected of board member.

National Study Shows What Pharmacists Actually Do

Six years ago, two professional pharmacy organizations recognized the need "to assist the profession in developing a basic guide for planning and implementing programs to assure that registered and/or licensed pharmacists maintain competence to practice."

A joint APhA/AACP task force was established to investigate and pursue ways of reaching that lofty goal.

The first major step in the plan, which has led to the "Standards of Practice" published here, was a national study of the current practice of pharmacy. The results of that study are contained in a 110-page book published last July by APhA and AACP.*

The study was developed for APhA/AACP by Educational Testing Service of Princeton, New Jersey. The inventory was mailed to a national sample of 5,025 pharmacists. Some 33 percent (1,647) completed the inventory and were counted in the survey. Respondents were asked to rate 71 responsibilities which were identified as describing the practice of pharmacists. The major responsibilities were grouped under four categories listed on the next page.

The report contains no surprises for practicing pharmacists. It found that there is a great deal of consistency in the practice throughout the United States. And it indicates that the practice is changing—and will continue to change—in the direction of more patient counseling and care.

The major findings regarding pharmacy practice were:

- 95 percent of the pharmacists felt the study adequately covered the major responsibilities of their practice.
- In terms of basic responsibilities (or job dimensions), pharmacists in all but one major practice setting spend the major portion of their time on prescription processing, followed by patient care functions, then general management activities, and finally educational activities. (Pharmacists in long-term care facilities spent most of their time in patient care functions.)
- Pharmacists' responsibilities require *use* of knowledge—rather than simple recall, recognition and comprehension of facts.
- Pharmacists generally felt that in the next three to five years they would be spending less time on processing the prescription and more time on patient care functions.

In addition to a better understanding of the practice, the study revealed a number of details about pharmacists and their practice settings:

- 81 percent of the respondents were male; however, two thirds of the females entered practice within the past five years.
- Community practice comprises 45 percent males and 28 percent females; these male/female percentages are reversed for hospital practice.
- 63 percent graduated more than five years ago.
- The practice settings of the respondents were 43 percent community pharmacy, 29 percent hospital, 29 percent large chain, 8 percent small chain, and 3 percent long-term care facility.
- Geographic location of practice of respondents was 44 percent urban, 35 percent suburban, and 21 percent rural.
- 60 percent of the pharmacists in practice 16 years or more are community pharmacists.
- More than one third of the pharmacists practice with no other pharmacist on duty.

While the national study produced no real surprises, it did provide the data base for the development of the Standards of Practice and the upcoming assessment program. It also provides—for the first time — real statistical evidence about the actual practice of pharmacy in the United States today.

—Samuel H. Kalman and John F. Schlegel

*The full report of Phase I of the AACP/APhA Continuing Competence in Pharmacy Project may be obtained by writing: APhA Order Desk, 2215 Constitution Ave., NW, Washington, DC 20037. Request your copy of "A National Study of the Practice of Pharmacy." Price is $5.00.

Four Major Dimensions Of the Pharmacist's Job

General Management and Administration of the Pharmacy
Selects and supervises pharmacists and nonprofessionals for pharmacy staff; establishes a pricing structure for pharmaceutical services and products; administers budgets and negotiates with vendors; develops and maintains a purchasing and inventory system for all drugs and pharmaceutical supplies; initiates a formulary system. In general, establishes and administers pharmacy management, personnel, and fiscal policy.

Activities Related to Processing the Prescription
Verifies prescription for legality, and physical and chemical compatibility; checks patient record before dispensing prescription; measures quantities needed to dispense prescription; performs final check of finished prescription; dispenses prescription.

Patient Care Functions
Clarifies patient's understanding of dosage; integrates drug-related with patient-related information; advises patient of potential drug-related conditions; refers patient to other health care resources; monitors and evaluates therapeutic response of patient; reviews and/or seeks additional drug-related information.

Education of Health Care Professionals and Patients
Organizes, maintains, and provides drug information to other health care professionals; organizes and/or participates in "in-pharmacy" education programs for other pharmacists; makes recommendations regarding drug therapy to physician or patient; develops and maintains system for drug distribution and quality control.

Comparison of Judgments of Percentage of Time Spent By APhA Member and Nonmember Groups

		Time Spent Currently		Time Spent Next 3-5 Years	
		Member N=1,172	Nonmember N=230	Member N=1,101	Nonmember N=210
Processing the prescription	M	47	54	38	47*
Patient care functions	M	12	9	17	12
General management and administration	M	13	12	15	13
Inventory, record-keeping, and control	M	8	8	8	8
Purchasing and receiving	M	7	8	6	7
Personnel administration	M	5	5	5	5
Education of public, etc.	M	8	4	11	6
		100	100	100	98

*Significantly different from zero at the 0.05 level of confidence

Biographical Information Percentages for APhA Members and Nonmembers

	Member N=1,198	Nonmember N=234
Highest Degree Held		
PhG	2	5
PhC	0	0
BS or B pharmacy	84	89
MS pharmacy	4	2
PharmD	9	2
PhD	1	1
Ethnic Background		
Black	1	0
White	94	96
Spanish surnamed	1	0
American Indian	0	0
Oriental	3	3
Others	1	1
Geographic Area		
Urban	44	42
Suburban	34	40
Rural	22	19
How Many Pharmacists Work with You?		
A not applicable	4	3
0	36	43
1	30	31
2	11	10
3	6	6
4	3	1
More than 4	11	5

	Member N=1,198	Nonmember N=234
Sex		
Male	81	83
Female	19	17
Years in Pharmacy Practice		
Less than 2	22	4
2-5	20	6
6-10	17	17
11-15	11	12
16 or more	31	60
Professional Setting		
Individual community pharmacy	42	48
Small chain	8	8
Large chain	16	21
Long-term care	2	4
Hospital/acute care	31	19
Average Number of Prescriptions Filled Daily		
Not applicable	12	6
25 or less	2	1
26-50	9	16
51-100	26	29
101-150	17	20
151-200	10	10
201-300	7	7
301-400	4	3
401-500	3	2
More than 500	9	6